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OF
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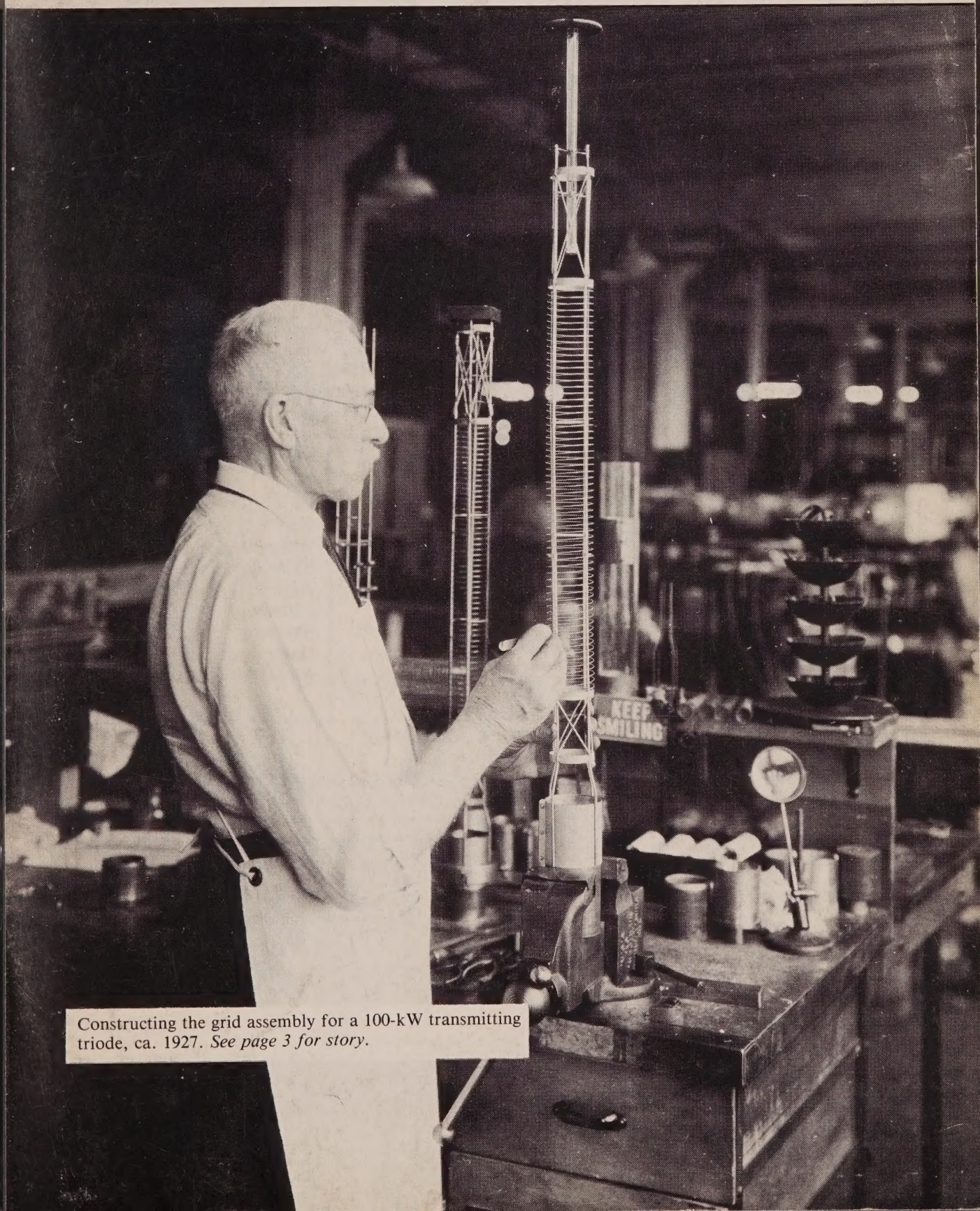

Constructing the grid assembly for a 100-kW transmitting triode, ca. 1927. *See page 3 for story.*

Devoted to research and documentation of the history of wireless communications.

Member:
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HOLCOMB, NEW YORK 14469

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A.W.A. JOURNAL
"The Old Timers Bulletin"

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FROM THE EDITORS

As of February 1, spring is approaching rapidly and the AWA has a busy season ahead. The Calendar of Coming Events shows numerous meetings scheduled, including another big trip to London as guests of the British Vintage Wireless Society. Those who took the first trip in 1984 have fond memories of the famous British hospitality. See the special writeup, and make your plans **now.**

A number of radio museums are in the news this month. Both the Pennsylvania State Museum in Harrisburg and the Museum of the Moving Image in New York have exhibits which, unfortunately, will be gone by summer. If you are interested, time to see them is short. An AWA trip to Harrisburg to view the Harry Houck artifacts and other material is planned for April 1.

On a more somber note, we direct your attention to the problems of the Foothill College Electronics Museum in California, as detailed on Page 47.

Our feature articles this issue include the conclusions of the Moorhead and Alley-Palley stories, and a visit to von Ardenne, a pioneer electronics developer.

Finally, to television historians and collectors: In case it has escaped you, 1989 is the 50th anniversary of American commercial television. AWA will have a special exhibit at the Holcomb museum.

ASSEMBLING GRID OF 100-kW TUBE

The "New York Times" featured a story on page 19 of its March 27, 1927 issue describing the manufacture of one of the first 100-kW water-cooled transmitting tubes - a milestone in vacuum-tube technology.

Pictured is a workman assembling the grid. (Note the working conditions - no "clean room" environment here!) The original tube stood 7-1/2 feet high and weighed 100 pounds. The total length of the tungsten filament was eight feet, with the diameter of a pencil lead. It required 6-3/4 kilowatts to heat. The article states that the amount of tungsten was 750,000 times as much as in a UV-199 receiving tube.

The tube was made at the Schenectady plant of General Electric and

(Continued on p. 46)

A.W.A. ACTIVITIES

FLORIDA MEET A SUCCESS

Norm Smith reports the AWA gathering in December at Bradenton a surprising success. Members (and non-members) from throughout Florida, as well as several from out of state, were in attendance. Result: another meet is scheduled for March 18. See details elsewhere in this OTB.

The school appears to be a good location with plenty of room for a flea market. Norm and his coworkers promise a short program and food at the next event. Vacationers are encouraged to attend.

HVRA SWAPFEST & PICNIC

Bob Sweeney

On November 5, the fourth annual Houston Vintage Radio Association swapfest and picnic was held at Bay Area Park. The weather was right warm for this time of year, which helped bring 72 people. After a few hours of swapfesting and a tailgate auction, we feasted on barbecue, 40 lb. of beef brisket and 20 lb. of sausage.

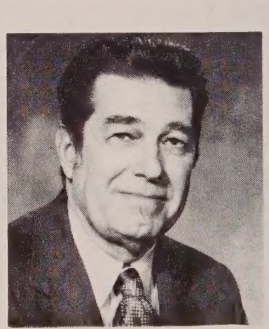
Afterward, an auction was held at the home of Roy Colvin. Roy had his garage chuck full of radios, over 160 items. Bill Werzner began auctioneering at 1:30 and didn't stop until four hours later. Over $4000 was received, with the club getting a 10% benefit for the work.

Partial listing: **AK** 67, $85; **Bosch** console, $300; **Brandes** 1928, $68; **Brunswick** phono-radio, $85; **Edison** C-2, $400; **Hallicrafters** Skyrider 23, $60; **Howard** console, $60; **Majestic** 130 console, $75; **Marti** with Cunningham tubes, $130; **Philco** 37, $18; **Philco** 89, $130; **Radiola** 62, $200; **Zenith** 5S252, $63.

RADIO CLUB OF AMERICA ANNUAL BANQUET

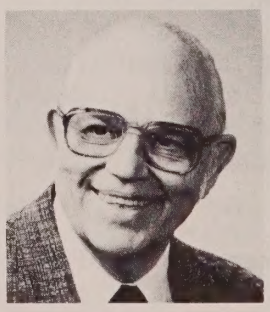
The Radio Club of America held its 79th annual awards banquet at the New York Athletic Club on November 18. AWA had a good turnout, with members filling two tables. Among them were Max and Renate DeHenseler, Bob Merriam, Jack Davis, Bill Fizette, Lud Sibley, Ralph and Carol Muchow, John Richardt, Stu Meyer, Ken Miller, Arch Doty, Mr. and Mrs. Ron Frisbie, "BB" Wentzel, Harry Mills, Ralph Williams, Fred Shunaman, and John Troster (W6ISQ), who traveled the greatest distance, from California.

Stu (W2GHK) came up with another fine technical program followed by the usual entertaining social hour, in addition to receiving the Club's Fred M. Link Award for his work in land-mobile radio. The high point of the banquet was Ralph Muchow's receiving the Batcher Award for "preserving the history of radio and electronic communications" - a recognition long overdue, since he has established and documented one of the finest historical radio collections in the country. -BK



FRED M. LINK AWARD
Stuart F. Meyer

Awarded in recognition of his contributions to the development of land mobile radio communications.



RALPH BATCHER MEMORIAL AWARD
Dr. Ralph W. Muchow

Awarded for his distinguished work in collecting, maintaining and exhibiting early radio transmitters and receivers.

COMING EVENTS
ANTIQUE WIRELESS ASSOCIATION

February 25 - CHRS Swapmeet, Foothill College, Los Altos Hills, CA
March 18 - Florida Meet, Bradenton
April 1 - Meet at Pennsylvania State Museum, Harrisburg
April 14-15 - AWA Southern Meet, NC, Winston-Salem
April 22-23 - AWA/Houston Vintage Radio Association, Galveston, TX
(TBA) - AWA/MAARC, Maryland
(TBA) - Arizona Antique Radio Club
April 29 - Local AWA Meet, Holcomb, NY
May 5-6 - AWA/IHRS, Ramada Inn, Ft. Wayne, IN
May 13 - AWA New Jersey, Tranquility
May 19-21 - ARRL Atlantic Convention, Rochester, NY
May 20 - SCARS, Hollywood-Burbank Airport, Burbank, CA
May 19-20 - AWA/Northland Antique Radio Club, Bloomington MN
June 21-29 - AWA Meet with BVWS, London, England
October 4-8 - AWA Annual Conference, Canandaigua, NY
November 5 - Annual business meeting, 2:00 PM, Sheraton Inn, Canandaigua, NY

CALIFORNIA MEET - CHRS

Saturday, February 25, 7:00 AM
Swapmeet sponsored by the California Historical Radio Society, at Foothill College, Lot E, I-280 and El Monte Rd., Los Altos Hills, CA
Information: 415-788-4072

Note: CHRS dues are $15/yr, for seven swapmeets, four quarterly journals and two semiannual audio news tapes. Membership secretary is Adam Schoolsky, 38007 Stenhammer Drive, Fremont, CA 94536, 415-791-0330.

FLORIDA MEET - BRADENTON-TAMPA-ST. PETERSBURG

Saturday, March 18
Meet, flea market, ladies' activities, starting at 8:00 AM, at Stewart Elementary School, 7905 15th Ave., N. W., Bradenton. For more details, send an SASE or phone:

Norm Smith
7203 17th Ave., N. W.
Bradenton, FL 34209
813-792-0003

PENNSYLVANIA MEET - HARRISBURG

Saturday, April 1

Pennsylvania State Museum, Harrisburg - parking lot behind Capitol building. Schedule to be finalized; tours of radio exhibits in the Museum.

For further information, write with SASE or call

Mel Comer
205 Roberts Road
Ardmore, PA 19003
215-642-5329
or
Lauren Peckham
Box E
Breesport, NY 14816
607-739-5443

NC - AWA SOUTHERN MEET

Friday & Saturday, April 14-15

Regency Inns & Suites, 128 N. Cherry St., Winston-Salem, NC 27101, 919-723-8861

Schedule:

Friday

AM	Registration, main lobby
3:00-3:45	QCWA program: Chuck Brydges, W4WXZ; Val Valentine, K4JO
4:00-4:45	Keys: Lou Moreau, W3WRE
Fri. & Sat.	eves: Hospitality room open

Saturday

8:00-11:30	Flea market
10:00-1:30	Ladies' tour
11:30-Noon	Set up eqpt for judges
1:00-1:45	Displays
2:00-2:45	Keynote:Marshall Helms
3:00-3:45	Q&A: Don Patterson, Mel Comer, Ron Lawrence, Bob Lozier

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(Continued from p. 5)

4:00-4:45	Rotary spark gap demo: Bill Grenfell, W4GF
6:30-7:00	Social hour
7:00-8:00	Banquet, buffet style
8:30	Howie Rice, K4NH, on submarine radio in WW II.

Registration: $5; ladies' program & lunch: $5; banquet: $10; motel (AWA rate): $30 single; $32 two or more. For details and registration, contact

Lew Elias, W4DBT
3919 Poindexter Drive
Winston-Salem, NC 27106
919-924-2162

TEXAS MEET - AWA/HVRA

Saturday & Sunday, April 22-23

Organized by the Houston Vintage Radio Association, to be held on the seawall adjacent to the Gulf, at the Hotel Galvez, Galveston Island, TX, 800-392-4285

Saturday - Old-equipment contest, auction, awards banquet (speaker: Ray Miller, KHOU-TV, founder of "Ray Miller's Texas")
Sunday - Swapfest

For more details, contact:

Kathy or Bob Botto
3505 Del Sur Drive
Baytown, TX 77521
713-468-4911

NEW YORK SPRING MEET

Saturday, April 29

Local AWA meet, dinner, and clearance sale at the AWA Annex and American Legion Hall, Rtes 5 & 20, Holcomb, NY (2 mi. E. of Museum)

10:30 AM: Auction of miscellaneous equipment at Annex. Back issues of radio magazines, 10 cents each.

Noon: Buffet dinner in Legion Hall ($6, incl. auction card). Tubes: 10 and 25 cents each - tester provided.

1:00 PM: Appraisal contest, open to members attending dinner.

1:30 PM: Auction of members' equipment and de-accessioned AWA items. Direct sale, buyer to seller. No minimum; everything goes. Auction card required ($1 at door) to help defray cost of facilities.

IMPORTANT! Dinner reservations MUST be made before April 25; seating (dinner) reservations will NOT be accepted on the day of the event. Write or phone NOW (don't send money):

Bruce Kelley, 716-657-7489,
Main St.,
Holcomb, NY 14469 or
Lauren Peckham, 607-739-5443,
Box E,
Breesport, NY 14816

INDIANA MEET - AWA/IHRS

Friday & Saturday, May 5-6

Organized by the Indiana Historical Radio Society at the Ramada Inn, Ft. Wayne, IN

Friday

PM	Early registration & seminars
7:00	"Old Tyme Movie"; AWA Show

Saturday

9:00	Registration in lobby; swapmeet in parking lot
9:30	Registration for Old Equipment Contest
10:00	Register auction items
10:30	Contest judging
1:00	Auction
4:00	More swapmeet
6:30	Social hour
7:30	Banquet, contest awards

For details, send SASE to

John Foell
7083 CR 11A
Auburn, IN 46706

For room reservations, contact

Ramada Inn
1212 Magnavox Way
Ft. Wayne, IN 46804
Phone 1-2RAMADA

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NORTHERN NEW JERSEY MEET

Saturday, May 13

"The Still," Tranquility, NJ, Sussex County Rte. 517, approximately 1.5 mi. north of exit 19 of I-80 (Allamuchy) (same as last year).

Dinner Friday evening; rooms available at the Panther Valley Motor Inn nearby for those wishing to stay over. Flea market and luncheon Saturday.

Dinner reservations must be made in advance. For details, send an SASE to:

John Richardt (W2WIY)
94 Bald Eagle
Hackettstown, NJ 07840
201-852-3475

MINNESOTA MEET - AWA/NARC

Friday-Saturday, May 19-20

Northland Antique Radio Club, Hotel Seville, Bloomington. More info in the May OTB. Contact: Jim Thompson, 612-822-4000.

CALIFORNIA MEET - AWA/SCARS

Saturday, May 20: Southern California Antique Radio Society annual auction and flea market. More information in the May OTB.

THE LONDON TRIP

Joyce Peckham

Come join us in London! AWA members have been invited by the sponsoring British Vintage Wireless Society to participate in the Second International Wireless Meeting in June 1989. Plans have us leaving NYC (Kennedy airport) via TWA on Wednesday, June 21, and returning Thursday, June 29. In London, Thursday and Friday will be unstructured and available for personal sightseeing.

On Saturday, we will join our British friends in a visit to the British Science Museum for a private viewing of material from their archives. In the afternoon there will be a visit to Gerald Wells' Vintage Wireless Museum for a catered English lawn party.

Sunday, we will go to Harpenden for the big annual BVWS meeting, flea market, and auction. Our ladies will go off to see historical sights. In the evening there will be a presentation of historical papers and slide shows.

On Monday we plan to see the Marconi factory in Chelmsford. Company officials plan a special display of historical materials and sites for us. There will be a pub lunch. Once again, a special trip is planned for the ladies. In the evening, we will have a closing banquet in a London restaurant.

On Tuesday and Wednesday, an **optional** trip is available. We have been invited to visit the Alexanderson alternator in Sweden. This is a rare opportunity to see such a piece of history. The plan is to go to Sweden via a ferry boat on Tuesday, stay overnight, then fly back to London on Wednesday.

For more information, contact me (England Trip, Box E, Breesport, NY 14816). Send an SASE. The travel agent handling flights and lodging is Claire Johnson, Four Seasons Travel of Elmira (319 W. Church St., Elmira, NY 14901, 607-733-8111). Call her **collect**. She can custom-tailor a trip for you. Mention AWA, as we get a special credit for each trip planned. Because this is an Apex flight, we urge you to make your reservations **early**.

The round-trip TWA flight cost is $761 per adult; the rate for a double room in the Leinster Towers Hotel, London, is £60 a night (roughly $110 at current exchange rates). There will be additional charges for bus trips, the banquet meal, and the trip to Sweden.

[Also: be sure to get your passport(s) in order **early** - a passport is indeed required to visit England. - Ed.]

In 1984 we had 36 AWA members in attendance for the First International Wireless Meeting. We hope you decide to join us this time!

-OTB-

OLD-EQUIPMENT CONTEST RESULTS - AWA National Conference, Sept. 1988

Reported by Ralph Williams, N3VT

Category 1 - **Passive Receivers**		
First:	Military Receivers Compared	Mike Katzdorn
Second:	SE143 with SE1071	Tom Pamula
Third:	Complete Aeriola Junior	Dick Brewster
Third:	Ducretet Crystal Set	Andre Chompret
Category 2 - **Receivers, One- and Two-Tube**		
First:	National Monodyne with Amplifier	Robert Lozier
First:	Firth Vocaphone	Ron Frisbie
Second:	DeForest RJ4	Don Patterson
Second:	Acme Detector and Amplifier	Carl Knipfel
Third:	Tuska 222	Merrill Bancroft
Category 3 - **Receivers, Three-Tube**		
First:	Paragon IIIA	Randall Renne
Second:	Grebe CR-5, Clarifier, and RORK	Philip Trauterman
Second:	Grebe CR-18 Special	Stewart Mount
Third:	SCR-59	George Potter
Spl Awd:	Inverse Duplex	Robert Miller
Category 4 - **Receivers, Four- and Five-Tube**		
First:	Lyradion	Lou Lindauer
Second:	Melco Supreme	Tod Prowell
Third:	Acme Reflex Breadboard	Don Iverson
Spl Awd:	National Screen Grid Five	John Nagle
Category 5 - **Receivers, Six Tube and More**		
First:	Silver-Marshall Superhet	John Caperton
First:	Hallicrafters SX-25	John Nagle
Second:	Grimes Viking	Billy Richardson
Third:	Leutz Reconstruction	Mike Batsch
Category 6 - **Spark Transmitters**		
First:	1917 SCR-49 Pack Set	Michael Payne
Second:	Chambers Sparkwheel	Lawrence Chestnut
Category 7 - **Tube Transmitters**		
First:	RCA ET3619 and ET3620	Nevell Greenough
First:	1933 Collins 150WB	Dave Swanson
Second:	1927 Radio Engineering Labs	Bill Fizette
Third:	Canadian Air 7-1154B	Lloyd Swackhammer
Category 8 - **Microphones**		
First:	Western Electric Condenser	Les Rayner
Second:	Ellis Lab Carbon	Ross Smith
Third:	Telefunken	Karl-Erik Erikson
Category 9 - **Kit Superheterodynes**		
First:	Ultradyne LR-4	Ludwell Sibley
Second:	Victor Two-Tube	Bob Dennison
Third:	Homebuilt	Bob McGraw
Category 10 - **Novelty Radios**		
First:	Grand Piano	Joe Koester
Second:	Radio Development Bottle	Lawrence Chestnut
Second:	Magic Tone Bottle	Geoffrey Bourne
Third:	Gem-for-the-Lady	Peter Yanczer
Spl Awd:	1933 World's Fair	Don Patterson
Category 11 - **Restorations**		
First:	Type-10 Tube Transmitter	Floyd Jury
Second:	GE Portable	Robert Enemark
Third:	Browning-Drake	Leo Kalinosky
Third:	AK 20 with Speaker	Reginald Collins
Elle Award:	Myers-Tube Radio	Bob Murray
Matlack Award:	Breadboard Transmittter	John Rollins and Marshall Etter
Display Award:	REL Transmitter	Bill Fizette
Eunice Thompson Award for Best Entry in Contest: SCR-49 Spark Transmitter		Michael Payne

Judges: Floyd Bennett, Geoff Bourne, John Caperton, Charles Days, Alan Douglas, Bob Lozier, Orval Parker, Ralph Williams

-OTB-

A W A AWARD LISTING

MEMORIAL AWARDS

YEAR	TYNE TUBE#	ELLE CRAFTSMAN@	THOMPSON BEST/SHOW+
1980	Patrick Dowd	Alan Douglas	-
1981	John Stokes	Bob McIntyre	-
1982	Lauren Peckham	Lincoln Cundall	-
1983	William Condon	-	Ralph Muchow
1984	-	Mike Katzdorn	J. & F. Kreuzer
1985	-	Ross Smith	Lauren Peckham
1986	Alan Douglas	A. C. Stoddard	Alan Douglas
1987	-	-	J. & F. Kreuzer
1988	Bill Orr	Bob Murray	Michael Payne

TRANSMITTER CONTEST, AWA HOUCK, AND MATLACK AWARDS

YEAR	OT TX% CONTEST	AWA HOUCK AWARDS& DOCUMENTATION	PRESERVATION	MATLACK AWARD*
1971	W2LV	Thorn Mayes	-	-
1972	W2LV	Bruce Kelley	Ed Raser	-
1973	W2LV	Gerald Tyne	Robert Merriam	-
1974	W2LV& W0TRF	Lou Moreau	Warren Green	-
1975	W1DM	William Breniman	Stuart Davis	-
1976	W1DM	Howard Schrader	Wayne Nelson	-
1977	W1DM	Ralph Williams	Vance Phillips	-
1978	K4TS	Don deNeuf	Lauren Peckham	-
1979	W1DM	Ivan Coggeshall	Joseph Pavek	-
1980	W2LV	Lloyd Espenschied	Ralph Muchow	William Shaw
1981	K4TS	Alan Douglas	John Caperton	-
1982	K4TS	-	Fred Hammond	John Haught
1983	W2LV	Kaye Weedon	Patrick Dowd	Bill Hurni
1984	K4TS	Floyd Paul	Rex Matlack	A. C. Stoddard
1985	K4TS	Hugh Aitken	Ralph Williams	-
1986	W8VSK	Bill Fizette	-	James Miller
1987	W2BJI	John Nagle	-	John Rollins
1988	W1YG	Don Patterson	Bob Lozier	John Rollins & Marshall Etter

TAYLOR AND DISPLAY AWARDS

YEAR	TAYLOR AWARD^	DISPLAY AWARD>
1985	Ken McIntosh	-
1986	Dick Brewster	Franz Mock/ John Glisson
1987	Edmund Taylor	Max deHenseler
1988	Stephen Hofer	Bill Fizette

Presented in honor of Gerald Tyne, for contributions to preserving or documenting the history of tube technology.
@ Given in memory of Bruce Elle, to recognize a constructor of high quality communications equipment of old or new type.
+ Awarded in honor of Eunice Thompson, early amateur operator, for an entry in the equipment contest at the National Conference.
% Honors the winner of the annual AWA old-time amateur CW contest.
& ,Presented in honor of Harry Houck, associate of Edwin Armstrong, for achievement in documenting radio development/history or in collecting/documenting radio artifacts on a noncommercial basis.
* Given, through support of Rex Matlack, W3CFC, for excellence in constructing or restoring amateur equipment.
^ Awarded in memory of John Taylor, television developer at RCA, for preserving the history of television.
> Presented to recognize quality and informational value in an exhibit at the equipment contest at the national conference.

-OTB-

IN·HOUSE

Bruce Kelley

THEFT FROM MUSEUMS: I've just read a report on theft from the Edison National Historic Site (Edison Museum) at West Orange, N. J. It seems a phonograph collector by the name of Petersen visited the Museum on 30 occasions between 1974 and 1979. He gained the confidence of the staff and systematically stole historical documents, photographs, and other material, including Edison's rare electric pen. In the late '70s, Petersen was jailed for embezzlement from his former employer, Stanford University. In the mean time, the Edison Museum suspected theft but had no proof.

In 1984-85, he was found selling or trading with collectors material which was positively identified as belonging to the Edison National Historic Site. Since this was Federal property, the FBI got involved, a search warrant was issued, and some of the material was recovered. Somewhere in the sequence of events, a fellow collector got into the act and cooperated with the FBI. There is more to the story. We'll keep you posted.

This is all very sad, since over a period of years, several collectors had been dealing with this shady character unsuspectingly. The FBI and National Park Service have no intention of prosecuting the collectors, since their purchases were made in good faith. However, the fact remains that the stolen property belongs to the Edison site.

On this subject, I've received reports that various items have also been lifted from electronic museums by crafty individuals with sticky fingers. All museums should have their artifacts properly marked, accessioned, and housed in secure display cases or locked drawers with a conscientious, alert staff.

This brings to mind a story told by our old friend Stu Davis, W2ZH. About 40 years ago Stu donated a fine historical collection of keys, sounders, relays, and other telegraph artifacts to a public museum in New Hampshire. Several years later he returned to the museum and asked to see his collection since it was not on display. A new curator could give little information as to its whereabouts. A little detective work revealed that one of the several intermittent curators with little interest in electrical or mechanical artifacts had relegated the material to the basement storage area. As time went by, certain individuals with nimble fingers then systematically transferred Stu's equipment to their own collections. This is enough of horror stories for this issue, other than to wonder if they ever caught the thief who stole the Marconi Multiple Tuner from a British collection.

SWISS MUSEUM: Continuing on the subject of public museums, AWA member and Hallicrafters historian Dr. Max DeHenseler, HB9RS, will be leaving in a few months to take over directorship of a large electronics museum in Switzerland. He promises a full report on his new venture and extends an invitation to AWA members to visit the facility. Details in a future OTB. Max is leaving the United Nations headquarters in New York City where he held the post of Chief Cartographer. He was instrumental in setting up the U. N. amateur station and was its trustee.

BROWNING-DRAKE: I had a surprise when I turned to page 13 in the last New Zealand club's Bulletin and found myself staring at the

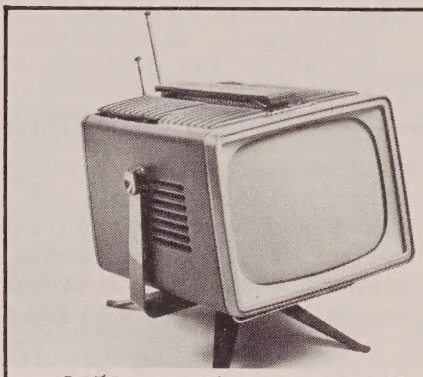
(Continued on p. 13)

AMERICAN MUSEUM of the MOVING IMAGE

The trip to New York for the Radio Club of America meeting provided the opportunity to visit the newly opened Museum of the Moving Image, located in Astoria, Queens. (An earlier report on this fascinating place appeared in the February, 1987 OTB.) It is now open to the public and definitely warrants a visit. Unfortunately, the current exhibit is a six-month display, with much of the loaned material to be returned by March 19.

The curator, AWA member Richard Koszarski, gave Jack Davis, Ralph Williams, and me a personal tour. Here are a few rare motion-picture and television objects that commanded our attention:

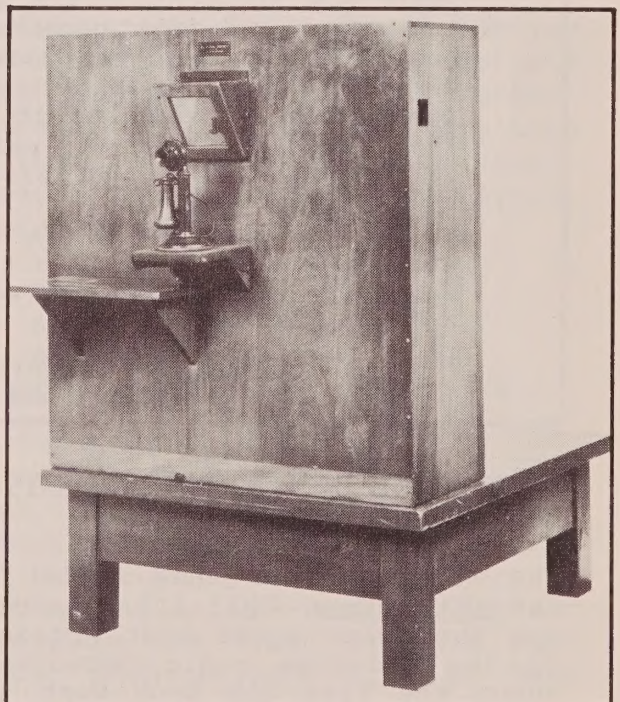
-1891 Edison Kinetograph camera.
-1894 Edison Kinetoscope.
-1895 Mutoscope.
-1897 Edison spool projector.
-1908 Powers Cameragraph.
-1910 Kinemacolor movie camera.
-1910 Pathe movie camera.
-1928 W. E. Vitaphone movie projector.
-1932 Three-strip Technicolor camera.
-1953 Ramsdell 3-D movie camera.
-1927 Bell Labs video telephone.
-Alexanderson/GE 48-line TV receiver.
-1928 Daven scanning set.
-1930 60-line TV camera.



1959 RCA Victor portable television on exhibit

In addition, several rare prewar and postwar TV receivers and cameras were on display. Many of the receivers are on loan from the collections of AWA members Arnold Chase and Jack Davis.

As the Museum's name indicates, the "moving image" can be either motion pictures or television, with a new entry: video tape. The Museum is located at 35th Avenue at 36th Street, Astoria, NY. I suggest calling for hours: 718-784-0077. -BK



Bell Labs' 1927 experimental picture telephone, on loan from Bell Labs.
Photo: David Allison.

-OTB-

AWA REVIEW, VOL. III

NOTE: It has been brought to the attention of the editors that a key paragraph in the Guest Editorial at the beginning of the AWA Review, Vol. III, was inadvertently omitted. The material is, in our opinion, so significant that we are herewith repeating the editorial in its entirety for the benefit of all the members. Our sincere apologies to Mr. Christiansen for the oversight.

GUEST EDITORIAL - AWA REVIEW, VOL. III

When editor Morris invited me to pen a commentary to accompany this third volume of the AWA Review, I told him I was honored to be asked and would be delighted to do so. Clearly the journal has gotten off to a commendable start. Aside from the obvious dedication of the editor and his authors, I reflected on what the journal has going for it. I thought of three things.

History is at best difficult to record. But most AWA members share a valuable characteristic in that they, like their predecessors, see the radio business/profession as a calling - not merely a job. Because of their personal interest and involvement, they have retained artifacts and documents that might otherwise have gone to the scrap heap or to the shredder. (Even so, think of all the lost corporate records that might have yielded a cornucopia of valuable historical information!)

A second fortunate circumstance relates to the arrival on the scene of some extremely competent professional historians of technology. I am speaking of those academics who have been trained in the specialty, usually at the graduate level. The best among them are able to both use and teach the methods of historians - good research, skepticism, and the use of multiple sources, to cite but a few. Those of us who find ourselves de facto historians can profit from the advice and consultation from these experts. I am pleased to see more of them participating in the activities of organizations like AWA.

This brings me to my third point. It is a reminder to all of us that a good bit of history is written behind the scenes. The reminiscences we exchange at radio club meetings, hamfests, and swap meets are important. The perceptions gained of inventors, entrepeneurs, and other personages in the radio field are important, too. The professional historians would, properly, warn us to clearly delineate opinion from facts and figures, but opinions and perceptions, I would submit, complement factual history and help the student of history to understand the dynamics of innovation as well as the sociology of radio history.

Recent presentations at AWA have elaborated upon the personalities and even the idiosyncrasies of the pioneers in our field. Properly recorded, such information can only enhance our understanding and enjoyment of radio history.

Donald Christiansen
Editor and Publisher,"IEEE Spectrum"; Member, AWA

ADDED NOTES ON "PROGRAM TRANSMISSION AND THE RADIO NETWORKS"

The article under this title in the AWA Review, Vol. III, discusses the color codes that applied to the old-time radio networks. About the time the book went to print, an additional color turned up. According to the Bell Laboratories Record of August, 1932, there was a full-time Amber Network, broadcaster unspecified. This adds one to the NBC Red, NBC Blue, NBC Orange, CBS Purple, Mutual Gold, VOA Bronze, White, Green, and Brown networks.

The Review article discusses the NBC Red round-robin network between New York and Chicago as it began in the Twenties, as a counterclockwise loop. The Western Electric Oscillator of December, 1945 describes the same network

(Continued on p. 13)

AWA REVIEW (Continued from p. 12)

after it had matured, as a clockwise loop including studios at Washington. Thus any of these cities could readily originate programs. West of Chicago, a quick-reversible leg fed to and from the studios at San Francisco and Los Angeles, with intermediate points bridged on.

AWA REVIEW, VOL. III

Volume III of the AWA Review (1988), still available, consists of seven papers of interest to collectors, historians, and students.

Ralph Williams continues his series of articles on the Atwater Kent story with 28 pages and 18 illustrations. Lud Sibley covers the history of the national radio networks of the 1920s and their pre-satellite technology. Bob Morris discusses the development of audio technology in the early days of broadcasting, and well-known historian Alan Douglas reports on how the development of the AC line-operated power supply by two government employees in the '20s led to a little-known patent situation which threatened to strangle the growing radio industry.

Lauren Peckham provides a complete review of the radio apparatus of Ernest C. Mignon, including 23 superb pictures of rare Mignon apparatus. Foreign and military telegraph keys are covered extensively by Lou Moreau and Murray Willer, two noted authorities on the subject. This paper includes 57 pictures, a must for key collectors. Finally, Glen Fuller, who has extensively researched the famous Alexanderson alternator, tells the story of their mechanical design development and their control systems.

Vol. III of the AWA Review (136 pages, 139 illustrations) is available by mail from Dexter Deeley, 8 Briar Circle, Rochester, NY 14618, for $9.50 postpaid. Please make checks payable to the Antique Wireless Association.

REPRINTS OF VOLS. I AND II?

Given the continuing interest in the original two volumes of the Review, now out of print, Lauren Peckham is curious as to the likely demand for a second printing. If interested, drop him a line.

NOMINATIONS FOR AWA HOUCK AWARDS

The time has come again for members to nominate recipients for the AWA Houck awards. The nominee for **documentation** must be a regular AWA member who has written several original articles on radio development/history in the OTB or other publications (this could include a book on a related subject).

The nominee for **preservation** should likewise be an AWA member who, through personal accomplishment, has acquired and preserved by documenting an outstanding collection of radio artifacts. This automatically excludes individuals who regularly buy and sell items.

Review a member's work in past issues of the OTB (or other historical sources) and send your selection(s) to the Awards Committee giving your reasons why the nominee(s) should receive the Award. The address:

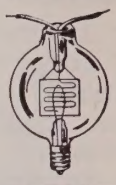
Robert Merriam
697 Tillinghast Rd.
East Greenwich, RI 02818

-OTB-

(Continued from p. 10)

cover page of the December, 1967 OTB. Editor John Stokes (Auckland) had written an article on the Browning-Drake receiver and was making reference to an earlier story in the OTB. On this subject, perhaps it's time to have another story on this well-known receiver circuit. (Glenn Browning was an AWA member until he passed away November 14, 1974). -OTB-

THE VACUUM TUBE



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W2GK

MOORHEAD AND THE ELECTRON RELAY

WILLIAM CONDON

PART 2 (Continued from the November, 1988 OTB)

1920 was not a good year for Otis Moorhead. In January, Marconi notified Moorhead Laboratories of the cancellation of its license, effective July. The financial position of the company was very poor, and the majority stockholders voted to reorganize. As a result, Henry Shaw became president and DeForest acquired a significant interest in the company. Moorhead was kept on as chief engineer, but had to assign his patents to the corporation. Thus he was now just an employee of the company he had founded. Given that during this period Moorhead had absolutely no competition in the tube field, it is difficult to understand the poor financial showing. Whatever the real reasons were, a golden opportunity had been lost.

The last Marconi VT ad ran in April of 1920. In May new ads for the reorganized Moorhead Labs announced the Moorhead VT. Also in May, some ads showed the old tubular Electron Relay, while others listed the DeForest Type 20 Detector. The Type 20, if actually sold, remains a mystery. The tubes shown in Saga of the Vacuum Tube as being Type 20s are now known to be the DeForest DV6 and DV6A of 1919. All VTs had serial numbers; about 85% had gold getters, the balance being clear. The first 3000 or so were marked MOORHEAD VT. The next 13,000 were erratic in marking. Some had MOORHEAD LABORATORIES and VT, some showed PATENTED NOVEMBER 7, 1905 and VT, but most had just VT. The later VTs were generally marked LICENSED FOR AMATEUR OR EXPERIMENTAL USE ONLY and VT. About half the VTs had A, 2, or VT on the press. Despite the expiration of the Marconi license in July of 1920, more than half the VTs carried the Marconi/DeForest logos on the base. About 40,000 were sold.

A new tube was announced in June, the based Electron Relay. The ER was a gas detector, and early versions were built much like the tubular ER. The same type of spiral copper grid and aluminum plate were used, the only significant difference being the tabs extending down from the plate and bent

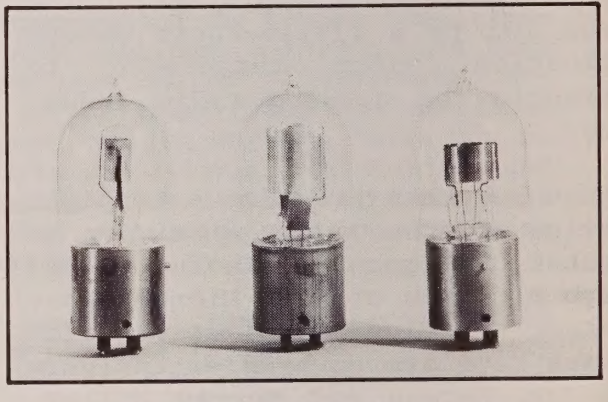


Figure 6. 1920 Moorhead based ER tubes.

against the press (Figure 6 center). In this construction, the filament and grid were attached only at the press, leaving the other ends free to move if jarred. About 4000 ERs were built this way. To relieve this condition, a mica spacer was added at the top of the plate to help anchor the filament and grid. An additional 7000 tubes were sold with the mica spacer. All of these had clear bulbs and serial numbers, and were

(Continued on p. 15)

MOORHEAD (Continued from p. 14)

etched ER on the bulb (Figure 6 center). There was no marking on the base or press. All previous tubes described used platinum leads in the press, but the based ER used Dumet for the filament wires and platinum for the grid and plate leads.

At this time the tube was modified, the plate being changed from aluminum to nickel. The height of the plate and grid winding was reduced to half the old dimensions, the diameter staying about the same. The filament went from a straight wire to a self-supporting hairpin type. The mica spacer was eliminated. While this new design may have reduced the manufacturing cost, it was a step backward in mechanical stability. The elements, especially the filament, were once again tied only at the press, resulting in a very microphonic design. The first few hundred or so used 4-1/2 grid turns and had the plate supported at one side only (Figure 6 right). The balance of the production had seven grid turns and plate supports at both sides. The first 25,000 came with either shiny or black plates and were marked ER on the bulb. The rest had black plates and carried the standard license notice in addition to ER. None had the Moorhead name or anything on the press. The first 13,000 had plain bases, but the remainder carried the Marconi/ DeForest logo. About 40,000 of the short-plate ERs were made.

During the reorganization of Moorhead Laboratories, two distributing companies were set up: the Atlantic Radio Supplies Company and the Pacific Radio Supplies Company. Starting in August of 1920, the tubes were advertised as the A-P Electron Relay and the A-P AmplifierOscillator. The tube cartons were marked A-P but the tubes themselves never had an A-P logo.

In December of 1920 the A-P Transmitting Tube was announced. Very similar to the VT in appearance, it was electrically equivalent to the Type B made for the British during WW I. This tube was initially licensed only for use in DeForest equipment, and was rated for five watts out. The restriction to DeForest gear was eventually lifted, as later ads mention use in Magnavox amplifiers and other apparatus. The Transmitting Tube was marked TT on the bulb, along with a license notice and a serial number. There was no marking on the base or press. The se-

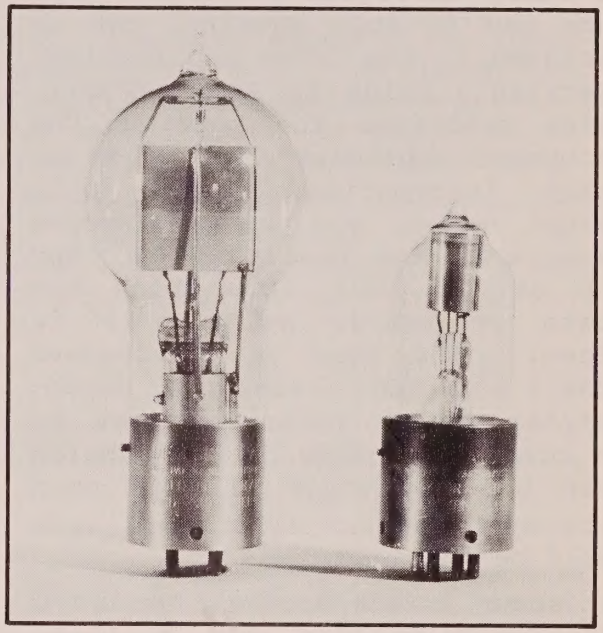


Figure 7. 1921 Moorhead A-P rectifier (left) and an unmarked "Moorhead amplifier" from the same time period.

rial-number spread of observed samples was not large enough to define a production quantity, but a number in the low thousands might be a reasonable estimate.

The influence of DeForest can be seen in the next type to be released, the A-P rectifier. First shown in May, 1921, ads pictured the rectifier as being nearly identical to the DeForest "Singer" power tube, except for omission of the grid. The author can find no evidence that the A-P rectifier was ever made quite as shown in the ads; all samples seen take the form of the tube shown in Figure 7 left. This tube had a clear bulb marked only with a serial number. The base generally had DeForest markings only, but some samples have been seen marked both DeForest and Marconi. The press had Dumet leads and was unmarked. No

(Continued on p. 16)

MOORHEAD (Continued from p. 15)

published data on filament ratings could be found, but tests on several samples indicated that a minimum of about 9.5 volts was needed to obtain the rated output current of 75 mA. As with the Transmitting Tube, an estimate in the low thousands is made for total sales.

Another tube of this period, believed to be a Moorhead product, is shown in Figure 7 right. This tube had no bulb marking, but is pictured in the Yates publication, Everyman's Guide to Radio (1924). Yates describes the tube as the "Moorhead amplifier" but gives no other information. The bulb height varies, but the distinctive feature is the small dome at the top of the bulb into which the plate protrudes, holding it in place. The base is a standard Shaw, marked either DeForest/Marconi or DeForest, just as in other Moorheads. The samples seen by the author all had open filaments, so no electrical data could be obtained.

Not shown is the Moorhead Series D Electron Relay (see Saga, p. 179). The Series D used a candelabra base, and had a grid structure similar to that of the DeForest CF-185. By this time the candelabra base was obsolete for new designs, so it seems unlikely that any appreciable number of the Series D were made.

Since the license from Marconi had expired, tubes sold under the A-P name were infringing the Fleming patents. RCA now held these patents and advised Moorhead Labs of this infringement. An agreement was reached in January of 1921 which granted Moorhead Labs a temporary license to build a specified number of tubes. Under this license Moorhead continued to sell tubes until mid-1922, at which time the company ceased operation.

Although Otis Moorhead was later briefly involved in another business, the Universal Radio Improvement Company, its activities will not be covered here. Moorhead died at the age of 30 on January 31, 1923 as the result of complications from a fall in his home. He left two children and his wife Barbara. Examination of a letter that he had written to a friend indicates an outgoing individual with a sense of humor. Other information shows a different side to his character, a quick temper and impulsive nature which could have made him difficult to work with. In any case his untimely death cut short further tube de-

(Continued on p. 37)

TABLE 1 - CHARACTERISTICS OF MOORHEAD TUBES

UNBASED TYPES

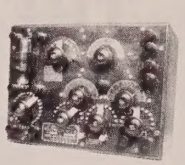
Type	Ef	If	Ep	Eg	Gm	Dimensions (D X L)
ER (1916)	4.0	1.1	20-45	-	-	0.75 X 3.95
Moorhead Ext Grid	4.0	-	15-35	-	-	0.88 X 3.05
ER (1917)*	4.0	0.7	20-45	-	-	0.85-1.0 X 3.25-3.6

BASED TYPES

Type	Ef	If	Ep	Eg	Gm	S/N Range Observed
Type R (British)	4.0	0.7	40	1.3	160	1849-19756
Type B (British)	6.0	0.85	400	20	200	None
VT32 (British)	6.0	0.85	400	20	200	None
SE 1444	4.0	0.7	40	1.3	160	34-25332
Marconi VT Cl. I (B)	4.0	0.7	20-40	-	-	223-10241, 100141-108140
Marconi VT Cl II (A)	4.0	0.7	40	1.3	160	168-5917, 200200-206896
VT (Moorhead, A-P)	4.0	0.7	40	1.3	160	207547-247180
ER (Tall Plate)	4.0	0.7	20-40	-	-	500252-502935 (no mica) 504821-510775 (w/mica)
ER	4.0	0.7-1.0	20-40	-	-	511058-551279
Type TT	6.0	0.8	80-500	-	-	400251-400333
Rectifier	9.5	3.25	(75 mA max output)			28-531

*Samples with serial numbers (probably 1919-20 vintage) were in range 173-254.

EARLY EQUIPMENT PROFILE



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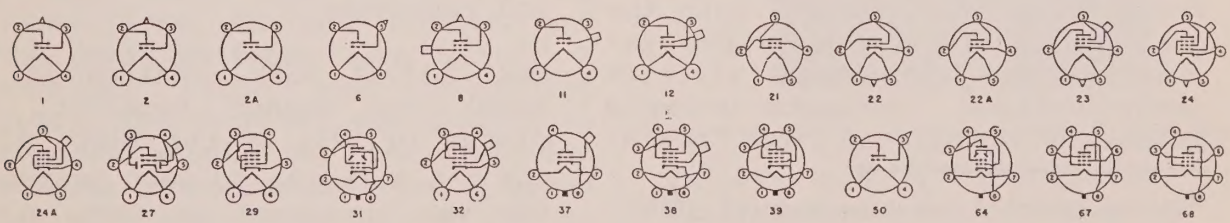
SPECIFICATIONS FOR WESTERN ELECTRIC GENERAL-PURPOSE TUBES

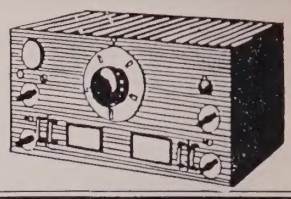
AWA members who have an interest in vacuum tubes are often frustrated in seeking information on electrical data, base connections, etc. for early Western Electric tubes. The list below gives information printed in a WECo General Bulletin in 1948. Although this table is far from complete, it does represent those tube types that are most popular with historians and collectors. If there is enough interest, perhaps more data can be furnished in a future OTB.

Code	Type	Cathode			Absolute Maximum Ratings					Average Characteristics — Class A						Maximum Dimensions Inches		Basing Diagram Number
		Type	Volts	Amps.	Plate Volts	Scr. Volts	Plate Diss. Watts	Scr. Diss. Watts	Htr.-Cath. Volts	Plate Volts	Plate Cur. Ma.	Ampl. Fact.	Trans-cond. μmhos	Plate Res. Ohms	Power Output Watts	Height	Diam.	
101D	Triode	O-F	4.2	1.0	200	—	2.0	—	—	130	7.7	6.2	1070	5800	.065	4 1/2	1 13/16	1
101F	Triode	O-F	4.0	0.5	200	—	2.0	—	—	130	6.8	6.5	1120	5800	.060	4 1/2	1 13/16	1
102D	Triode	O-F	2.1	1.0	190	—	—	—	—	130	0.8	29.6	510	58000	—	4 1/2	1 13/16	1
102F	Triode	O-F	2.1	0.5	190	—	—	—	—	130	0.85	31.0	620	50000	—	4 1/2	1 13/16	1
104D	Triode	O-F	4.5	1.0	190	—	—	—	—	130	25	2.5	1180	2100	.160	4 1/2	1 13/16	1
205F	Triode	O-F	4.5	1.6	400	—	14	—	—	350	35	7.3	1870	3900	—	4 1/2	1 13/16	6
215A	Triode	O-F	1.0	0.25	110	—	0.3	—	—	60	2.0	5.7	420	13500	.0029	2 11/16	11/16	1
231D	Triode	O-F	3.1	0.06	150	—	—	—	—	90	2.1	8.4	510	16300	.0045	4	1 3/32	2A
244A	Triode	H	2.0	1.6	200	—	1.2	—	100	135	5.5	10.1	1010	10000	.049	4 7/8	1 13/16	22
245A	Tetrode	H	2.0	1.6	200	75	—	—	100	135	4.8	135	750	180000	—	5 1/4	1 13/16	23
246A	Tetrode	O-F	3.3	0.1	180	67.5	—	—	—	135	1.5	285	390	725000	—	5 1/4	1 13/16	8
247A	Triode	H	2.0	1.6	200	—	1.0	—	100	135	3.2	15.2	940	16000	.037	4 7/8	1 13/16	22A
252A	Triode	O-F	5.0	2.0	550	—	38	—	—	450	60	5.1	3450	1500	7.0	6 3/4	2 7/16	2
257A	Triode	O-F	3.1	0.06	150	—	—	—	—	90	2.1	8.4	510	16300	.0045	4 9/16	1 3/32	11
259A	Tetrode	H	2.0	1.6	275	100	—	—	100	180	5.5	550	1380	400000	—	5 1/4	1 13/16	23
259B	Tetrode	H	2.0	1.6	275	100	—	—	100	180	5.5	550	1380	400000	—	5 1/4	1 13/16	23
262B	Triode	H	10.0	0.32	200	—	—	—	30	135	2.8	15.7	900	17500	.035	4 3/4	1 9/16	12
264C	Triode	O-F	1.5	0.30	110	—	—	—	—	100	2.1	7.2	580	12400	.033	4	1 3/16	2A
271A	Triode	H	5.0	2.0	500	—	—	—	100	400	37.5	8.3	2920	2830	2.8	6 3/4	2 7/16	22A
272A	Triode	H	10.0	0.32	200	—	1.4	—	100	140	5.4	5.6	760	7400	.120	4 7/8	1 13/16	22
275A	Triode	O-F	5.0	1.2	330	—	17	—	—	200	47	2.8	2770	1030	1.9	5 5/8	2 3/16	2
281A	Tetrode	O-F	5.0	1.6	250	75	—	—	—	130	35	5.0	1470	3400	2.2	6 3/4	2 11/16	21
283A	Tetrode (Var. Mu)	H	2.0	1.6	275	100	—	—	100	180	5.9	585	1360	430000	—	5 1/4	1 13/16	23
285A	Pentode	H	2.0	1.6	275	220	—	—	100	180	8.8	135	880	153000	.65	5 1/4	1 13/16	24
300B	Triode	O-F	5.0	1.2	480	—	40	—	—	300	60	3.8	5400	700	6.0	6 1/2	2 7/16	50
309A	Pentode (Var. Mu)	H	10.0	0.32	250	100	—	—	150	180	4.8	1100	1100	1000000	—	4 29/32	1 9/16	24A
310A	Pentode	H	10.0	0.32	275	180	2.5	0.4	150	135	5.5	1350	1800	750000	.250	4 29/32	1 9/16	32
310B	Pentode	H	10.0	0.32	275	180	2.5	0.4	30	135	5.5	1200	1800	650000	.250	4 29/32	1 9/16	32
311A	Pentode	H	10.0	0.64	200	150	—	—	150	135	30	122	2800	43000	2.0	4 29/32	1 9/16	24A
328A	Pentode	H	7.5	0.425	275	180	2.5	0.4	150	135	5.5	1350	1800	750000	.250	4 29/32	1 9/16	32
329A	Pentode	H	7.5	0.85	200	160	—	—	150	135	30	122	2800	43000	2.0	4 29/32	1 9/16	24A
336A	Pentode	H	10.0	0.64	275	275	9.4	3.1	60	250	30	336	4200	80000	3.5	4 7/16	1 9/16	29
337A	Pentode	H	10.0	0.32	275	150	2.5	0.4	150	135	6.0	1070	1650	650000	—	4 29/32	1 9/16	32
347A	Triode	H	6.3	0.50	200	—	—	—	30	135	2.8	15.7	900	17500	.035	4 3/4	1 9/16	37
348A	Pentode	H	6.3	0.50	275	180	2.5	0.4	30	135	5.5	1200	1800	650000	.250	4 29/32	1 9/16	38
349A	Pentode	H	6.3	1.0	275	275	9.4	3.1	60	250	30	336	4200	80000	3.5	4 7/16	1 9/16	39
350B	Beam Tetrode	H	6.3	1.6	400	300	25	4	150	400	53	400	6250	64000	20	5 13/32	2 1/16	31
352A	Duodiode - Triode	H	10.0	0.32	200	—	—	—	100	135	2.1	13.3	650	20500	.042	4 3/4	1 9/16	27
373A	Pentode	O-F	2.0	0.25	250	150	—	—	—	150	2.0	1900	1320	1400000	—	3 1/4	1 7/16	67
374A	Pentode	O-F	3.0	0.53	150	150	3.5	1.0	—	135	18	210	3000	70000	1.3	3 1/4	1 7/16	68
375A	Beam Tetrode	H	20	0.32	130	130	6.0	1.3	—	45	12.5	72	4700	15300	0.23	4 7/8	1 7/16	64



-OTB-

THE COMMUNICATION RECEIVER



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THE WESTERN ELECTRIC 9-TYPE AIRCRAFT RECEIVERS

PART 2* - THE 1932 9-D LOW-FREQUENCY BEACON RECEIVER

WILLIAM B. FIZETTE, K3ZJW

INTRODUCTION

By 1930 the U. S. Department of Commerce had established radiotelephone broadcasting stations at intervals of about 200 miles along practically all the major existing airways of the country, and was in the process of installing radio beacon stations to aid the navigation of aircraft in flight. The development of radio for aircraft communications and navigation purposes was promoted; names like Herbert Hoover, Jr. (then working as a radio technician for Western Air Express) and Howard Hawks appear in the literature of the day.

While the broadcasts of beacon signals and weather reports were confined to the range of 285 to 315 kc, design parameters called for a low-frequency receiver which would tune from 500 kc (600 meters) to 250 kc (1200 meters). Radiotelephone channels for two-way communication were above the existing broadcast band, in the 1500-6500 kc range.

Many of the radio operators of the air transport companies had started out as radio amateurs. It was natural for them to choose, at least in the beginning, equipment made by the various companies catering to the amateur for ground station use. Not only were they familiar with the gear, but it was virtually all that was available at the time. Designs by National and Hammarlund were frequently used, and the later (1932-36) National AGS, HRO, and variations of the NC-100 series were a direct result of this involvement.

Airborne receivers, however, required specialized design to withstand the rigors of early flight. The three American companies who pioneered their technical development were RCA, Stromberg-Carlson, and Western Electric. In the majority of English-speaking foreign countries, Marconi equipment was favored.

In 1928 the Bell Telephone Laboratories, funded by Western Electric, built up the research facilities and ground station at its Whippany, N. J. location, with the goal of developing operating parameters for commercial aircraft communications. Flights using a Fairchild monoplane (and, beginning in 1930, a Ford trimotor) measured the efficiency of radio transmitters under differing weather conditions and evaluated experimental airborne transmitters and receivers.

The initial work resulted in the Model 8-A beacon receiver, replaced in 1930 by the 9-A. Also, the 8-A airborne 50-watt transmitter was announced in 1930, along

(Continued on p. 19)

*(Continued from the August OTB)

9-TYPE RECEIVER (Continued from p. 18)

with the 9-B high-frequency receiver. In 1932 the 9-A was superceded by the 9-D beacon receiver, which was mated with the 9-B and 8-A transmitter to form a complete aircraft communications system. From the outside all the receivers appeared identical, with only minor circuit differences. Weight was an important design consideration, and the three units with all accessories totaled about 130 lb.

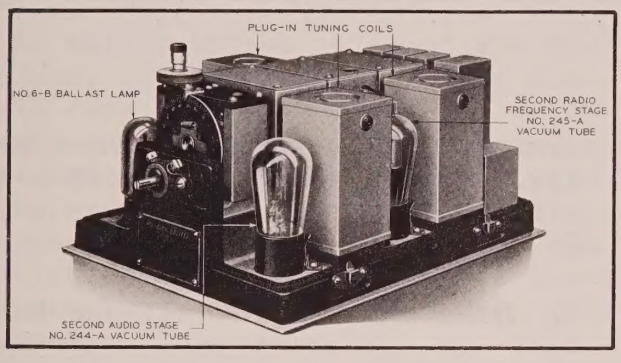

PLUG-IN TUNING COILS
NO.6-B BALLAST LAMP
SECOND RADIO FREQUENCY STAGE NO. 245-A VACUUM TUBE
SECOND AUDIO STAGE NO. 244-A VACUUM TUBE

Fig. 1. The WE 9-D low-frequency beacon receiver with cover removed.

Both the 9-A and the 9-D were intended for aural beacon reception, but a visual indicator had been developed, and the later receiver had provisions for tying a vibrating-reed visual indicator into the AVC circuit. This AVC output was designated "E grid."

As with all new aircraft receivers of the period, the unit was designed for remote installation, with the only mechanical connection to the cockpit a length of flexible cable which connected to the "coffee-grinder" tuning control, geared with an overall speed reduction of 264:1. In the Fokker F-32, the cable was almost 50 feet long, but with only neglibible tuning backlash. Electrical connections for filament and plate power, the volume control, the phone jacks, the AVC circuit, and the power switches were through a shielded cable and connecting plug. The receiver was clamped to a shock mount, not for reduction of tube microphonics - not a problem with the tubes used - but to preclude vibration from loosening the various fasteners and literally shaking the receiver apart. It was recommended that a vertical antenna be used to avoid directional effects; the lead connected to the binding post on the cabinet top.

Western Electric recommended that all engine electrical components be shielded and that the various metal parts of the aircraft be bonded together at frequent intervals, preferably in original manufacture.

Inspection of the receiver shows only the highest-quality components and workmanship. For the most part the parts were of WE manufacture, including the tubes, which were especially ruggedized to preclude microphonics. The chassis and the individual tuning-capacitor compartments were of cast aluminum, while the cover was of welded aluminum. Inspection of the parts list shows, in addition to the WE parts, Faradon capacitors, Durham and Electrad resistors, and Eby sockets.

The space-charge detector circuit is unusual for American equipment: the screen grid is used as the control grid, while the control grid is run at a positive potential to accelerate electrons to the plate. Otherwise the circuit appears conventional, with three stages of TRF followed by the detector and a single audio amplifier. The E-grid lead was grounded when a visual indicator was not used.

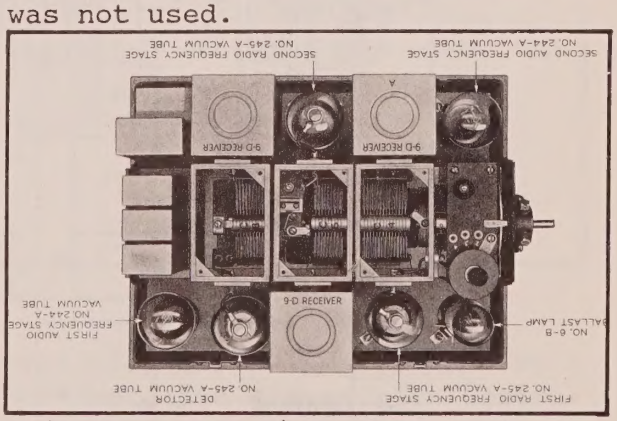

SECOND AUDIO FREQUENCY STAGE NO. 244-A VACUUM TUBE
SECOND RADIO FREQUENCY STAGE NO. 245-A VACUUM TUBE
9-D RECEIVER
9-D RECEIVER
9-D RECEIVER
FIRST AUDIO FREQUENCY STAGE NO. 244-A VACUUM TUBE
NO. 6-B BALLAST LAMP
DETECTOR NO. 245-A VACUUM TUBE
FIRST RADIO FREQUENCY STAGE NO. 245-A VACUUM TUBE

Fig. 2. Top view of the 9-D receiver showing arrangement of coils, condensers, and tubes.

(Continued on p. 20)

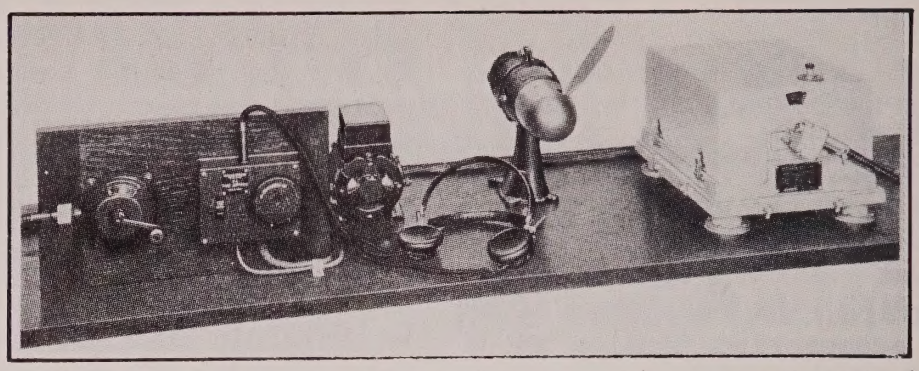


Fig. 3. The WE 9-type receiver and accessories needed for aircraft mounting. Note the wind generator with constant speed propeller and the remote tuning control.

CONCLUSION

To those familiar with aircraft radios used in WW II and even until the tube units were replaced by solid state, it is obvious that the mechanical design work of the pioneer manufacturers was good enough to survive the test of time. The changes, when they occurred, were the result of new electrical circuits and components and, eventually, a need for channelized systems.

It should be emphasized that aircraft radios of the early commercial variety are historically significant and constitute a valid class of collectibles, as relatively few of each type were made due to rapid advances in communications technology. The serial numbers the writer has seen are low. For example, two Model 9-As are Nos. 298 and 301, and a 9-D is No. 339.

My sincere thanks to all who have sent in information. Special thanks go to Nick Oland, W3DSE, for copies of the manuals, to Lud Sibley for researching the Western Electric and Bell Labs sources, and especially to Dan Bode, who sent me large quantities of material representing many hours of work on his part. We are especially interested in hearing from the "old timers" who worked in aircraft communications during the early days and have personal stories to tell. (Continued on p. 26)

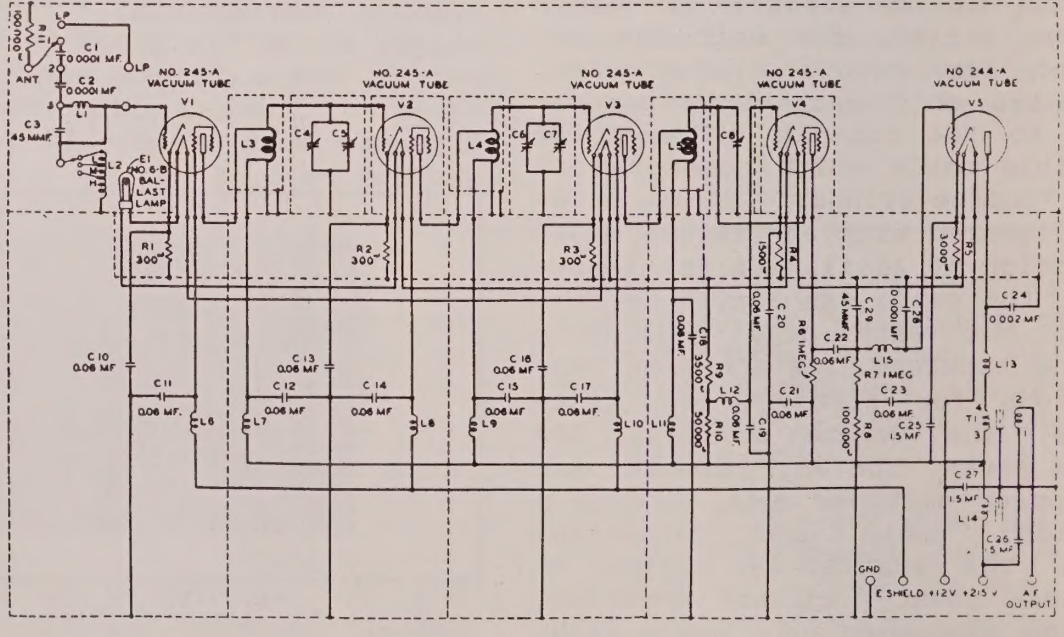


Fig. 4. The circuit of the 9-D beacon receiver.

THE NATIONAL SW-54

Rodney Schrock, KA3NMJ

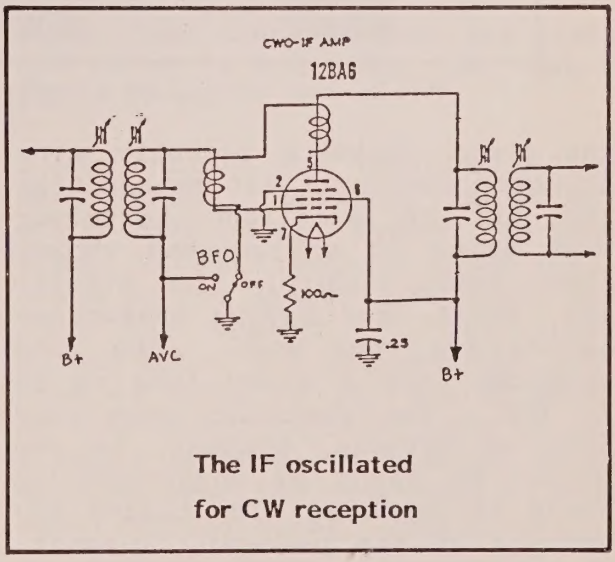
As I said in a previous article, the two most popular of the shipboard radios I encountered were the Hallicrafters S-38 and the National SW-54. Both of these models came to me for repairs, which were never major. The Nationals seemed to hang in pretty well and the owners used them constantly, especially in port. Out in the Atlantic, broadcast reception disappeared, even with an outdoor antenna.

National SW-54

When an SW-54 is removed from its case, it is immediately apparent that it is not constructed in that famous rugged National tradition. If we examine the circuit found in Photofact No. 141, it turns out to be just an ordinary five-tube AC-DC set with a BC band plus three others. Its most novel arrangement is its "BFO": an inductive link between the output and input of the IF amplifier. Grounding this loop through a switch makes the "BFO" inoperative.

Recently I bought one of these sets, checked it over, replaced the filter capacitors and the 1000-ohm resistor in the power filter, fired it up, and it worked. Realigned it and it played even better. Replaced a couple of bypass capacitors and it worked better yet. There was a decrease in sensitivity in the middle of the third band (5-20 MHz); changing components in the oscillator grid circuit plus changing the 560-ohm resistor to put the oscillator screen and plate right at 90 volts all but eliminated that condition.

Alignment on the fourth band was a bit tricky, but when it was done, 15 and 20 meters and CB performance wasn't bad at all. However, the mechanical vernier called "bandspread" didn't do as well as the vernier variable capacitor on the S-38.

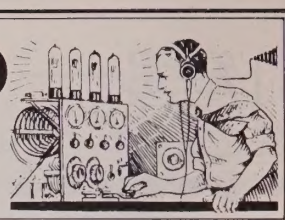


The IF oscillated for CW reception

After all, the SW-54 was more of a "fun" set than a precision instrument. It probably did a lot to entertain beginning SWLs and prospective hams.

-OTB-

AMATEUR RADIO



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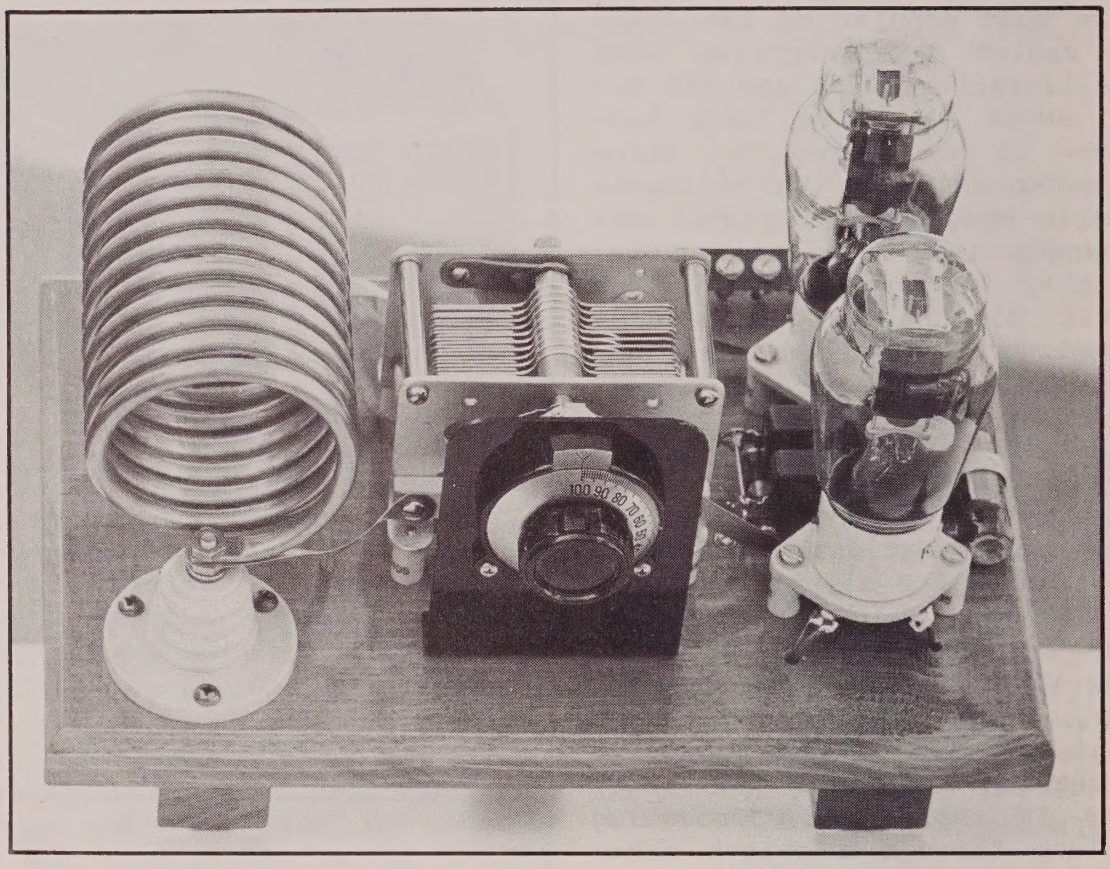
1929 QSO PARTY TRANSMITTER

Gil Lahuillier, W2HIN (SK)



P.P. Raytheon VT 25s (210s) in Hartley circuit. Constructed by W2HIN in 1975.

The photo shows a recently constructed push-pull 210 transmitter that is an excellent performer when using an unregulated choke-input power supply. The stability, drift, and keying characteristics are very good. The note produced into a dummy load is T9 to T9X. The stability when used into an antenna, however, is degraded by windy WX conditions as would be expected. By taking advantage of the push-pull circuit, the two tubes are in series across the tank circuit and the inter-electrode capacity is less than with one tube. I believe the "Q" of the tank circuit is greater if you use the same coil and capacitor that is used in a one-tube rig.

The dimensions of the board are 7" by 11." Tubes in the photo are VT25s (210s) but they can be replaced with 45s. According to QST, push-pull 45s were the most popular type because of the economy at the time and the fact that those tubes were common in broadcast receivers. My first rig used a pair of 45s on 80 meters with a Collins antenna tuner and served me very well.

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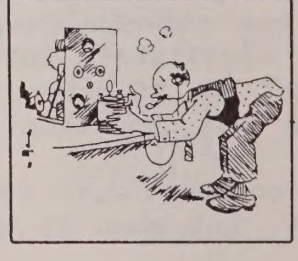

RESULTS OF 1929 TRANSMITTER QSO PARTY

OCTOBER 19-20, 1988

Bud Hall, K2LP

[As announced in the August OTB, this annual affair for AWA members is based on 1929-vintage or earlier transmitters, self-excited, with ten watts or lower input power, on 80 meters. The use of a straight hand key and a receiver of oldtime vintage are strongly encouraged.]

This event was very successful and satisfying, judging from all the letters from the participants. Radio conditions were good, especially on the second night. Fran Emerich, W2VDI, was "top gun" with 31 QSOs and Ed Pohlig, W2KTU, second with 30. Especially interesting was the fact that many stations were using receivers typical of the 1929 period, like TRFs and SW-3s.

Operating technique and courtesy, I thought to be greatly improved, and the skill in digging out weak signals through all that QRM was amazing. For some reason, east-west propagation was at a minimum, with only two Midwest stations known to have operated. The boys in W4 Land did a great job and W4COC's T5 note took the prize for being the most distinctive. There were no Canadians . . . where were you, VE3BDV?

A total of 37 AWA members participated, with 30 logs received. W2BGN submitted a check log with 30 different calls, all copied on his homebrew honeycomb-coil receiver.

We are all saddened by the passing of Gil, W2HIN, who worked hard to contact 21 members during the QSO Party. We will miss you, Gil . .

RESULTS

CALL	QSOs	EQUIPMENT
W2VDI	31	Hartley, 9 W, HQ-120
W2KTU	30	45 TNT, 9.6 W
W2LYH	29	211, 9 W, 5-tube HB super
W4VBX	26	210 TNT, 9 W
W3VVS	24	210 Hartley, 9.2 W
N2FCZ	24	P-P UX-210 Hartley, 9 W
W2HBE	23	UX-210, 10 W, UX-201A Regen
W1KSK	22	45 TNT, 9.2 W
WB2MVK	22	210, 6 W, 4-tube TRF/regen
K2LP	22	210 TGTP, 9 W, SS1R
K2OA	21	210 Hartley, 6 W, HQ-120
W1HH	21	Hartley, 6 W, FB-7
W2HIN	21	210, 9 W, 3-tube regen
W4NM	21	210 TNT, 9 W, 51J4
W1DX	19	45 TNT, 6 W
W2AN	17	UX-210 TNT, 8 W, HQ-120
W4COC	15	210 TNT, 9 W, early HRO
AB4EL	14	Hartley, 10 W
W2SN	14	210 Hartley, 9 W, SW-3
W4OTN	12	210, 9 W, 4-tube HB regen
W3HWT	11	UV-210 Hartley, 10 W, SW-3
WB9K	10	210 TNT, HRO
W2FW	10	CX-310 Hartley, 9 W
W1BPI	9	210 TNT, 6 W, 1935 HRO
W1SZJ	9	6L6 Xtal, 7 W, SW-3
W3INV	8	210 TNT, 6 W, Autodyne
W1YJ/4	8	P-P 45, Colpitts, 9.2 W, SW-3
K4KRE	8	UX-245 Hartley, 10 W, BC-348
W2FFU	7	CX-301A TNT, 1.5W QRP
KA3NMJ	1	10, 5 W, (2) 201A regen

Stations known to have operated, but no log submitted: W3EAN, NA4G, N4EE, WB8OFB

SOME FURTHER OBSERVATIONS ON THE 1929 QSO PARTY

Louis Mateo, WB2MVK

Well, the long-awaited AWA 1929 QSO Party is over now, and what a party it was!

I was anxious and impatient, like many others, watching the clock since one hour before curtain time. A few testers, like musicians tuning their instruments before the concert, a few last-minute QSOs, but at about ten minutes to seven PM all was silence. At 7:00 sharp curtains came up and a whole symphony of musical notes spilled over the frequency. Some were crystal-clear, others chirpy or sparky ones, and couple of guys' rigs sounded like a country sawmill in full operation. A few drifters swung up and down, but most of the rigs were fairly stable for that kind of design. You know what? . . . the rougher ones were the most active, since their

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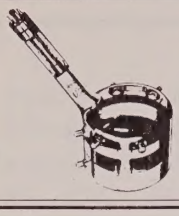
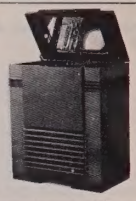


THE TELEVISION RECEIVER



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"ALLEY-PALLEY": 1936 - 1986

ALBERT ABRAMSON

PART 2

[This is the second part of Mr. Abramson's article. It's of particular interest to those members who are considering attending the joint AWA/BVWS (British Vintage Wireless Society) meeting in June. Details of the trip are outlined elsewhere in this issue.]

Some 50 years later the BBC, much changed and about to abandon the 405-line standard that had brought it so much early prestige, decided to celebrate its opening day. Plans were made a year in advance to refurbish the old Marconi studio at Alexandra Palace. Purely by chance, most of the old gear, cameras, etc. had been put away and saved from the scrap heap. It was decided to rebuild the old studio, complete with its unique lighting bridge. The Baird studio would not be rebuilt as none of the equipment could be found. So its space was to be reestablished as a modern studio for use of educators and public broadcasters. It was also decided that as many of the survivors of that opening day were to be present. Such pioneers as Tony Bridgewater (retired BBC executive and television historian), Cecil Madden (early editor and first producer at Alexandra Palace), Jasmine Bligh (one of the first two announcers), and a host of others were to be honored guests. There was to be a rededication by the Lord Mayor's Council and speeches by all concerned.

The British electronics industry took "fifty years of television" quite seriously. It was planned to sponsor other events during that week. There was the "Golden Box" exhibition showing the growth of British television, using the most modern methods. The opening of the Film and Television Museum

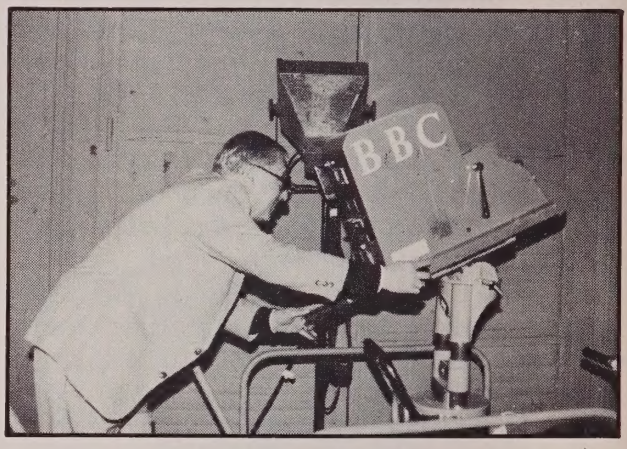


Fig. 1. The author with a 1936 Emitron camera.

at Bradford was to coincide with this week. Finally, the Royal Television Society was to have its Grand Ball at Grosvenor House as a culmination of these activities.

For some 14 years, I had been researching my book, A History of Television, 1880-1941, and had developed a warm relationship with Tony Bridgewater, a charming, unassuming gentleman of grace and wit. He had started with Baird Television in 1928 and had gone over to the BBC in 1932, working there until retirement. I had first met him in doing research on my book in London. He had done everything possible to tell me the story of British TV as he had lived it.

When it was announced that the ceremonies were to be held in November, 1986, he had written and asked if I could get to London then. He stated in his letters that he could get me to be an honored guest. I was quite thrilled and advised him that I would be pleased to be part of the celebration. So it was arranged that my wife Arlene and I would come to London during this period and be part of the ceremonies. I was quite honored. London is my fa-

(Continued on p. 25)

vorite city in the world. I dearly love the theater; we could see the most up-to-date plays. We ended up staying at the Waldorf Hotel on the Strand, within walking distance of half a dozen theaters and Covent Garden.

The two weeks of November 1 to 15 were the most memorable in my life. Every night brought a new thrill. Our first show was the "Golden Box," presented on a large screen consisting of 35 smaller screens which depicted the history of British television.

This was followed by a train trip from Kings Cross Station to Bradford, about 200 miles north of London. We were taken on a private train in which we sat at tables flowing with wine and champagne. Besides all of the celebrities aboard, there was a special "cinema car" where movies were shown while the train was traveling. (In-flight movies are not really new!)

The opening of the Film and Television Museum at Bradford was inspiring. Eastman Kodak, who helped sponsor the Museum, was moving its vast collection of motion-picture memorabilia there from Harrow.

This was also true of the Science Museum in South Kensington. All of its television exhibits, including such items as Baird's first television system, Tedham and McGee's 1932 camera tube and other early Emitrons, cameras, and receivers, were now on display at Bradford. The dedication ceremonies were true to Bri-tish tradition.

Then, on Saturday evening, there was a Grand Ball at the Grosvenor Hotel sponsored by the Royal Television Society. It was a grand time, quite formal. I had to wear a tuxedo and my wife her finest evening gown. What a thrill! We were surrounded by the most amiable group of people, all trying to make us feel at home. Eleven of the guests were brought on stage and honored. Mrs. John Baird, Jasmine Bligh, Cecil Madden, Tony Bridgewater, etc. were there.

We danced to live music of the Thirties until 2:00 in the morning. With reluctance we left after one of the most pleasant nights of my life.

The next day was Sunday, November 2. At 1:30 we got a call from the concierge stating that a Mr. Bridgewater was waiting for us in the lobby. We told him that we would be right down. Getting out of the elevator, we met Tony, who was going to drive us to Alexandra Palace. On the way there, he pointed out every item of interest

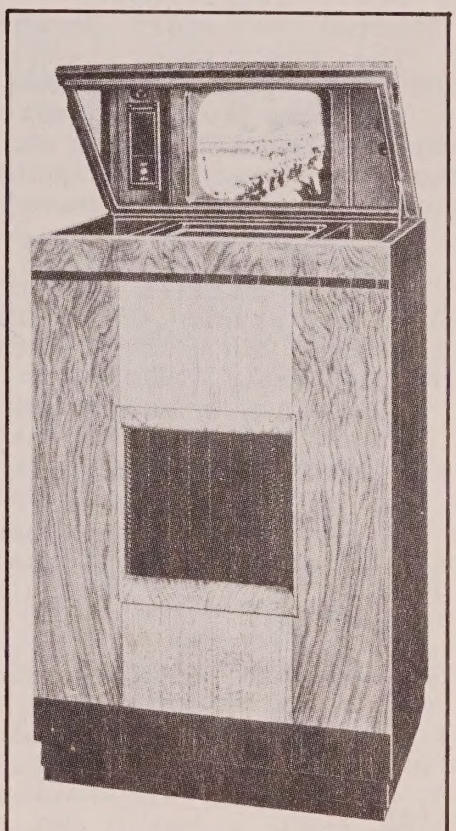


Fig. 2. The 1937 basic "mirror-in-the-lid" H.M.V. television receiver.

to us. Once at the Palace, we signed in. I explored the EMI studio with amazement. I had seen dozens of pictures of the original studios; they had rebuilt it quite realistically. It felt almost as if I had been transported back 50 years.

There were two Emitron cameras on their original pedestals. The unique light bridge was in the center of the studio. Other older equipment was evident throughout the studio. There was a large crowd, so we took our seats to enjoy the ceremonies. We were treated to a film made in 1936 for the opening of Alexandra Palace. Then there were speeches by various parties. By far the most interesting one was given by Cecil

(Continued on p. 26)

"ALLEY-PALLEY" (Continued from p. 25)

Madden. What a thrill to see this man! He told of his efforts to bring every bit of entertainment in London to Alexandra Palace and put it on camera. I had brought along my video camera and taped bits and pieces of the ceremonies. The party was finished a little after 4:30 and I hated to see it end. Tony drove Arlene and me back to our hotel and left us a little sad that it was all over.

Yet it wasn't really over. I had been invited to visit Broadcast House, the traditional headquarters of BBC Radio in London on Monday, November 10. My host was a young gentleman, Jeffrey Cohen, who took me through the building and showed me the great amount of radio production taking place there. The thrill of the day was being taken downstairs and shown the original studio where Baird Television had done its telecasting in the early 1930s for the BBC. It was now a room used for audio transcriptions, but had a plaque commemorating the three years of service under Baird. There were a few pictures showing the original operation. Certainly the ghosts of early television were in the air.

On Wednesday, the BBC had a reception, arranged by Nicholas Moss (chief assistant to the managing director of BBC-TV), for Arlene and me at the main TV station in Shepherds Bush. Again, we were given the royal treatment with true British hospitality. Several members of high management were brought in to meet us. There was a splendid lunch laced with a variety of wines and champagne.When it was over, we were given a variety of gifts to remember the occasion.

The final event was with the Institute of Electrical Engineers. They were having a meeting on the "History of Television" and had invited me to present a paper on the "History of Television Recording, 1922 to 1959" as part of the program. It was given in the main (Michael Faraday) auditorium on Friday, November 14. I had a problem, having 52 slides to present in only 22 minutes, so it was necessary to rush a bit.

I was thrilled to see a few real television pioneers there. Among them were Dr. Hans Gerhard Lubszynski, Les Flory, and Dr. E. L. C. White. I had met each of these gentlemen in the past and it was a thrill to see them again. One sad note: Les Flory told me that Ray Kell, one of the American television pioneers, had died earlier in the month. Only then did I realize how precious and fragile human beings are.

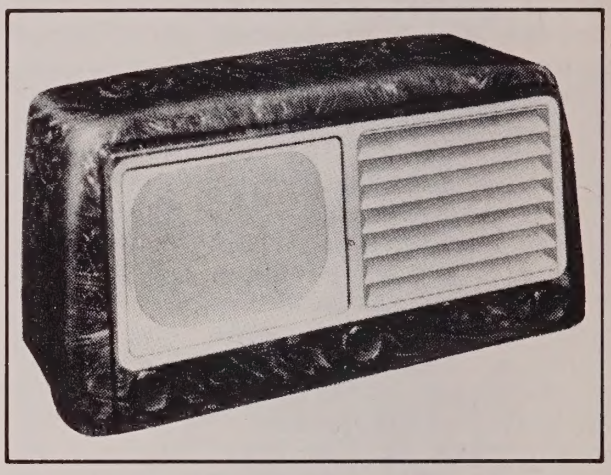


Fig. 3. The 1949 GEC #1091 9-inch receiver, available in 'London' and 'Birmingham' versions.

ILLUSTRATIONS:

Television - the first fifty years K. Geddes & G. Bussey, Philips Electronics, Croydon, 1986

BBC TV Presents © a fiftieth anniversary celebration, N. Moss, British Broadcasting Corp. 1986

-OTB-

9-TYPE RECEIVER (Continued from p. 20)

REFERENCES

Myron F. Eddy, Aircraft Radio, 1931.

H. K. Morgan, Aircraft Radio and Electrical Equipment, 1939.

Western Electric Instruction Bulletin No. 507, "Radio Receiver 9-D."

R. L. Jones and F. M. Ryan, "Air Transport Communication," Bell Telephone Laboratories Monograph B-478, May 1930 (reprinted from AIEE Transactions, vol. 49, pp. 187-197).

E. L. Nelson and F. M. Ryan, "Radio Facilities for Aircraft Communication," Bell Telephone Laboratories Monograph B-471, May, 1930 (reprinted from the S. A. E. Journal, Vol. 26, pp. 326-334, March, 1930).

-OTB-

A VISIT TO VON ARDENNE

MORE ABOUT THE LOEWE TUBE

Dr. Harry E. Stockman

I read with great interest the article about the Loewe 3NF tube in the February, 1988 issue of the OTB. By 1917, there were radio amateurs and experimenters in the Scandinavian countries who listened regularly to the powerful long-wave stations in Paris and Berlin (Nauen) and, not the least, the Russian transmitters. When 2LO in London came on the air it, too, became quite popular. Code signals around 2000 meters came in loud and clear, and there was not much need for amplification. Nevertheless, some experimenters put together microphone amplifiers to get the volume up, staying away from tubes even though they were available. The influx of American tubes did not really come about until 1920 or so, when the fabulous UV-201 appeared. The American tubes were more expensive than the stand-by Philips, Valvo, Triotron, etc. When the Loewe tube showed up in 1926, it was treated as a wonder tube, but its price tag was too high for the experimenters. They could get three Triotrons (the cheapest one) for the price of one Loewe, and then could hook them up any way they wanted. Some manufacturers put the Loewe tube in their sets, and probably made some extra money.

In 1929, if I remember the year correctly, I worked for "Radio" magazine in Stockholm, Sweden. Having been employed by the AEG-Telefunken Company, I was picked to go to Germany to interview Manfred von Ardenne, the brain behind the Loewe tube. He lived in a big house outside Berlin, and had converted most of the floors into a dream-like radio laboratory with outstanding facilities. He took me around, but seemed concerned about the future of his Loewe tube in view of the increasing competition from "ordinary" tubes. He had one Loewe hooked up as an RF amplifier, which was new to me, and I think it also worked as an IF amplifier and detector in a superhet. What impressed me most was von Ardenne's excellent chemical laboratory where he conducted experiments with miniaturization of resistors and capacitors. He said that, while he could make the components smaller and smaller, the real problem was how to design them so that they did not ruin the vacuum in a year or two. He said he had developed a new "getter" technique that would solve the problem.

At the time, von Ardenne was probably the world's greatest expert on the miniaturization of components. While the Loewe tube may be looked upon today as a curiosity that lasted only a few years, it was a distant forerunner of today's integrated circuit, the IC.

This was the time when the prospect of the tubeless radio first appeared. While the first tubeless receivers had already been demonstrated by 1927, there were manufacturing difficulties to be overcome, and on top of this the inventor, J. E. Lilienfeld, had called out an enemy he could not stand up to: the multi-billion-dollar world-wide tube industry. Lilienfeld was granted several patents, particularly Nos. 1,900,018, filed March 28, 1928; and 1,877,140, filed December 8, 1928. Both are available from the U. S. Patent Office in Washington.

When Bell Laboratories got into the act some fifteen years later, contributing the transistor in 1947, it had the backing and the money to take on the problem. Finally the tubeless radio was given to the world, long after Lilienfeld had proven that it could

(Continued on p. 28)

VON ARDENNE (Continued from p. 27)

work. While he failed to give his invention a catchy name like "transistor," he seemingly had the trappings of that gadget. His patent covers amplification, oscillation, and detection. He used exceedingly thin contact areas between oxides and talked about "molecular thickness." His device had a base, but his emitter and collector were referred to simply as "contact plates" or "blocks." Figure 3 in his Patent 1,900,018, with a transistor symbol instead of the physical device, could be included in any text today explaining how the transistor works. On the other hand, in fairness it should be stated that the Bell Laboratories transistor devised by Brattain, Bardeen, and Shockley utilized a different scientific effect, the key to which was the injection into semiconductors of excess mobile minority charge carriers. In fact, the Bell field-effect transistor was a closer bet.

We have now gone the full circle from tubes and integrated tubes to transistors and modern ICs, but here the Loewe tube reminds us that there really is nothing new under the sun. But instead of just three tubes in one, we now have, for example, prototype 16-megabit memory ICs with 16 million-plus active transistors on a single chip. Nevertheless, tube "ICs" are produced today, but one hundred tubes per mosaic may be the record, not a very inpressive figure in comparison.

As for von Ardenne, he spent the Thirties doing research on cathode-ray tubes, electronic television systems, and electron microscopes. He published several papers in English in the Proceedings of the IRE, the last in December of 1939, as well as in the British and German technical press. He produced at least three books; the text on cathode-ray tubes was published in Britain, in English translation, in 1939.

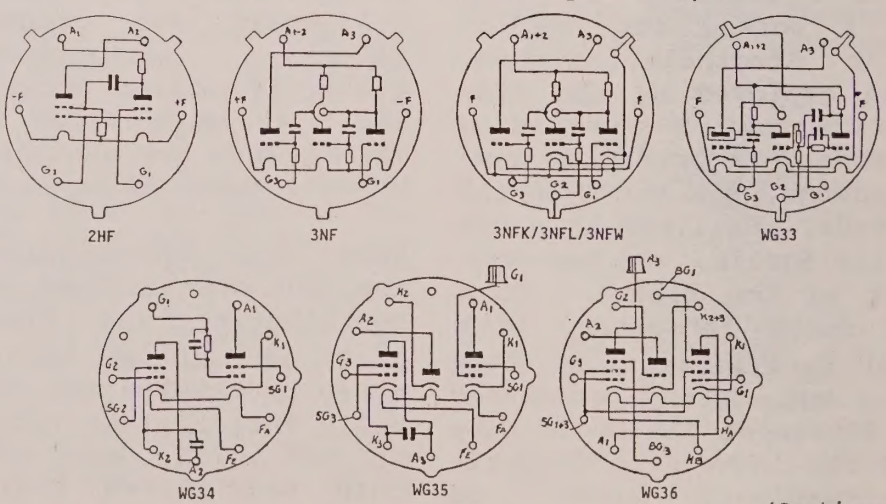
[He apparently fell into Russian hands at the end of World War II, not being released from work in the Soviet Union until the mid-Fifties. -Ed.]

THE LOEWE MULTI-SECTION TUBES

The Loewe multi-section tubes comprised an interesting variety:

2HF: a dual space-charge tetrode ca. 1926, operated from a 4-volt battery, forming a two-stage resistance-coupled RF amplifier.

3NF series: a 4-volt triple-triode, for use as a grid-leak detector and two audio stages. There were two subtypes: the 3NF Bat (presumably "Batterie") and the 3NF Net (probably "Netz," or line-operated).



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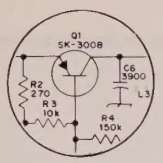


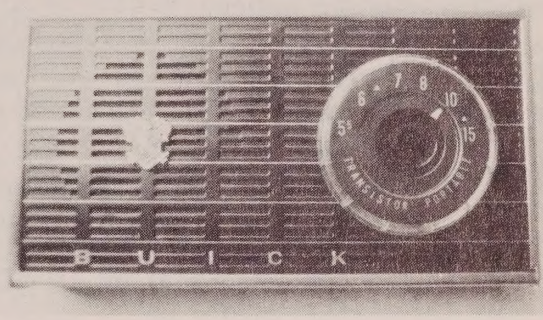
TRANSISTOR RECEIVERS

EDITED BY
NORM SMITH
7203 17th Ave. N.W. Bradenton, FL 34209
All correspondence requires SASE for reply

THE 1958 BUICK TRANSISTOR "TRANS-PORTABLE" RADIO, MODEL 981970

The Delco division of General Motors Corporation made the decision to produce a radically new type of car radio for the 1958 model year. This was to be not only a car radio, but a transistor portable as well. These radios varied in design and were made for the Buick, Pontiac, and Oldsmobile divisions of GM. The version covered in this article is the Buick Division model.

The set is a conventional superheterodyne portable which measures 7" long, 3-1/2" high, and 1-1/2" deep. The case is made of extruded aluminum with a gold-tone finish. The front is also metal, painted black with gold stripes. A large vernier tuning-dial scale is located on the right side; the Buick coat of arms is on a badge in the center of the speaker grille. There is a ten-pin plug on the left end, along with two single-pin plugs. The set slides into a holder which makes connection to power, speaker, and antenna leads. An RF stage and a large audio output amplifier were mounted on the external bracket in order to produce enough power to function as a car radio.



1958 Buick transistor "Trans-Portable"

In portable operation, the set used four AA-size penlight cells to deliver six volts.

Not many of these sets ever made it to final delivery at the dealerships, because most portables were stolen while in transit from the factory to the dealers.

LOS ANGELES RADIO MANUFACTURING - THE FIRST TWENTY YEARS

By **Floyd A. Paul**, Reviewed by **Alan Douglas**

Unearthing information on 60- to 70-year-old radio companies can be a real detective job, especially for the smaller ones, often run by one man and in business only a short time, with little advertising and even fewer permanent records. Their surviving products are often the only evidence we have of their existence.

There may be people still living who worked at these companies, dealt with them, or perhaps designed their products or ran them, but the trick is finding these men. Floyd Paul has done this for a sizable number of West Coast radio companies, tracking them down and interviewing all sorts of long-lost personnel. His primary focus, Los Angeles in the 1930s, was a haven for producers of midget and mantel radios. Small and flexible, these companies were "first on the block" with innovations in circuitry and cabinet styling, but because their production runs were small and their sets wee usually sold under other brand names, little is known about them. Some built amateur receivers too, Emmitt Patterson and Karl Pierson (Pierson-DeLane) for example. And, of course, many prominent men and companies of the 1940s and 50s got their start in the 30s.

In general, this book is a compilation of articles written for the Southern California Antique Radio Society over the past few years, with some new text and illustrations added. In fact, many of the pages are printed directly from old Gazette paste-ups. While this makes for a somewhat disorganized presentation, and causes some duplication of material, all the relevant facts can easily be found from the thorough model and name indexes. By thus saving the con-

(Continued on p. 46)

HISTORICAL ARTIFACTS

OLD TIME ADS are FREE to members interested in collecting and restoring early radio equipment for personal use.

RULES FOR ADS:

1. Only ONE per issue per member. Send SASE for acknowledgement.
2. Material must be over 25 years old and related to electronic communication.
3. Give full name, address and zip.
4. AWA will not repeat ads. Repeats require another notice.
5. The Association is not responsible for ANY transaction.
6. AWA retains the right to reduce size of ad if over SEVEN (7) lines.
7. AWA does not accept commercial advertising.
8. Deadline for ads:

FEBRUARY issue--DECEMBER 10
MAY issue ------MARCH 10
AUGUST issue----JUNE 10
NOVEMBER issue--SEPTEMBER 10

Ads received after the above dates will be discarded. Mail ALL ads to:

RICHARD RANSLEY
17 SHERIDAN ST.,AUBURN,NY 13021

(Do NOT send ads to Headquarters.)

WANTED

--Brightson Blue tubes, Radio Retailing magazines of the 30's and 1932 issues of Radio magazine. Floyd A. Paul, 1545 Raymond Ave., Glendale, CA 91201

--Van Der Bijl's Thermionic Vacuum Tubes book, RCA Tube Handbook set(HB-3) and Transmitting Tubes Manual (TT3); WE 540AW loudspeaker in good condition. Attila Balaton, 56 Oakland Place, Summit, NJ 07901 (201) 522-9465

--ZAHL radar tube VT-158, 831 triode, tube sockets for 204A and Western Electric 212, info on Westinghouse CL-2 tube; RCA Transmitting tube manual TT2, Electronic Applications of the Smith Chart by Phillip Smith (1969), OTB prior to Volume 19. John Walker, 16112 W. 125th St., Olathe, KS 66062 Tel. (913) 782-6455

--MESCO or Century test buzzers with base diameter of 1½" and 2" in working order . S.N. Blake, K1CPW, 186 Summer St., Andover, MA 01810

WANTED

--military manuals TM-30/420 Japanese military, TME11 technical data,German and Japan, any information on US Signal Corps basic components history, Collins 312B, SM-3 in good condition. Tajima c/o Toshiba, 701 Westchester Ave., WhitePlains, NY 10604

--variable condensers, Murdock 361 tapped disc, Furnell Taper coil, Brooks ribbon, Freshman mercury, Remler 2 or 3 gang, Wade square-law, Bradleydenser and Helicon. William Werner, 2765 Sherwood Rd., Mounds View, MN 55112

--A and B batteries of the 1920's, especially Eveready. Also cabinet parts and manual for Zenith 7G605 Transoceanic, as well as Zenith signs, ads, literature. Scott D. Prather, KB9Y, 2776 S. Monroe St., Denver, CO 80210 (303) 758-9381

--telegraph keys or bugs for my private collection. Early or unusual shapes and manufacturers worldwide wanted. Please help with those rare ones. Gil Schlehman, 335 Indianapolis Ave., Downers Grove, IL 60515

--old radios made for bicycles. Any type. Also need any accessories or paperwork. Michael Payne, 609 N. Fairview Cr., Alvin, TX 77511 (713) 331-9217

--entire 1934 "Z" and "H" line of radios produced by the Silver-Marshall Mfg. Co. Chuck Dachis, WD5EOG,"The Hallicrafter Collector", 4500 Russell Drive, Austin, TX 78745

--purchaser of FB7 in AWA auction. I have a bottom plate. Will send free for cost of shipping. Bill Suter, 1627 Heather Glen, Dallas,TX 75232 Tel. (214) 371-7915

--Collins 75A4 IF filters, any bandwidth.Please help me return my great old receiver to operating condition. Jim Hanlon, W8KGI, 5560 Linworth Rd., Columbus, OH 43235

--information,schematic,layout of Aeriola Senior. Also copy of inside lid instructions. J.F. Burton, 162, Mawney Road, Romford, Essex, RM7,7BE,England

--Northern Electric R11 Receiver; schematic and operating instructions for Roberts recorder Model 770X. Bill Beaton, 79 Meadowlands Dr., Nepean, Ontario K2G 2R9 (613) 224-1789

WANTED

--RME-HF-10,RME-ME-14,RME-LF-90, early Hallicrafters "Skyrider", literature and manuals for early amateur gear. Steve Barnes, K6PFW, 848 N. Silverwood, Upland, CA 91786

--Col-R-Tel color wheel from the mid 50's; 7DP4 picture tube; McIntosh tube equipment. eorge Mayne, 307 Moxon Dr., Rochester, NY 14612 (716) 865-5227

--early radar equipment: BC-402,BC-403 scope,BC-404 Rcvr,BC-405 transmitter, BC-406 rcvr,BC-407 transmitter,BC408, BC-409 keyer; 50 Years of U.S. radar; SCR-268,SCR-270/1 Don Helgeson, POB 3087, Skokie, IL 60076-3087

--crystal sets to add to my collection of over 130 in my collection. Erwin Macho, Ambrosweg 17/A/8 A-1230 Vienna, Austria

--Crosley radios from 1920 to 1952 in any condition. Michael Morrell, 7151 Davia Rd., West Falls, NY 14170

--early quack medical devices, any ring mount microphones, extra elements, ring assemblies and stands. Richard Cane, 8391 NW 21 St., Sunrise,FL 33322

--AK-type 11 tuner,rf coils, tube socket w/rheostat and other breadboard parts. Bob Nicholson, 3423 S. Long, Topeka,KS 66605 Tel. (913) 266-9473

--National SW-3 2 coil sets #31A,#33A, #34A,#35A preferably but coils #31,#33, #34,#36 ok. Please state condition and price. Art Hale, Box 1453, Oldsmar,FL 34677

--operating manuals for National NC100XA and Hallicrafters SX-16.Copies ok. Also 465 Khz crystal filter for SX-16. Harwell Davis,Jr., 911 Saulter Rd., Birmingham, AL 35209

--Hallicrafters HT-9 xmitter complete, also power cable from dynamotor to ART-13, xmitter connectors P-1301 and P1302 on cable. F.W. Nicholas, P.O. Box 37094, Phoenix, AZ 85069

--telegraph keys -early and unusual and other old telegraph instruments and related items. Larry Nutting, 4025 Slate Ct., Santa Rosa, CA 95405 (707) 539-1883

--copy of the AWA Review Volumes I and II. Gordon Symonds, 26 Ossington Ave., Ottawa, Ontario K1S 3B4 (613)232-2198

--Ted McElroy's course of instruction in Morse code (1945), copy ok. William Pierpont,2418 N. Fountain, Wichita,KS 67220

--National Type H drum dial, National SW-5 rcvr, National NC-5 or HFC Converters and Philco Model 60B Cathedral. David Combs,W5VJW, 2000 Victory, Wichita Falls, TX 76301 (817) 767-0077

--Zenith Chassis 1202 dial glass, "Radio Today" magazines for April and May 1939. Information on Powell Radios built in L.A. in the 1920's. Jerry Talbott, 1440 SW 239th, Hillsboro, OR 97123 Tel. (503) 649-6717

--source for wooden knobs and/or old style plastic knobs for 1940's vintage table and parlor radios. Bill Litant, P.O. Box 439, Lincoln, MA 01773

--WWII German communications radio equipment and any other WWII German electronic equip., optics and movie cameras. Steve Puntillo, 1911 Rowley, Madison WI 53705 or call (608)233-1569 after noon Central time.

--for my AK Mod. 9 (4445) the following Designation Discs; +A, -AB, +20, +B.Will accept repros! Fred Creed, VE3DZ, 503-283 Fairway North, Kitchener, Ontario, Canada N2A 2P1 (519) 894-5582 collect

--want to hear from anyone with info on G.E. A82-A87 (1936). Also need I.F. can cover for same. Ray Larson, 12241½ Gorham Ave., W. Los Angeles, CA 90049

--VCR copy of recording of this years programs at the AWA Conference including early commercial stations,Alexanderson alternator, early KDKA, trip in nostalgia,Tesla coil demo. Will reimburse all costs. Clarence Swartz, 7415 Van Ness Rd., Baldwinsville, NY 13027

--old QSL cards and letters from SW & MW stations. Non-amateur verifications of reception by DX-ers of the 1930's and 1940's. Also an English Eddystone rcvr, 4 knobs for 1938 GE Model FE. L.B. Zimmerman, 8448 No. Harding Ave., Skokie, IL 60076

--photos,sketches,schematic, info on an SCR 60 direct reading wavemeter (Signal Corps order 40733 SC) made by General Radio. Will reimburse any costs. Thanks. Rick Ferranti, 254 Florence Avenue, Arlington, MA 02174

--speaker for Hallicrafters SX-100. Alfred Zemp, HE9PYN, Mellingerstrasse 176, CH-5400 Baden, Switzerland

--type 32 tubes and Hammarlund SuperPro power supply (SP200). Peter Kapp, P.O. Box 1620, Mendocino, CA 95460 Tel. (707) 964-0762

--WSA crystal detector,Clapp-Eastham Ferron detector. Have for trade Navy loose coupler, French 1917 antenna tuner

WANTED

for E-3 set and others. SASE for list. George Potter, 2069 Sienna Trail, Lewisville, TX 75067 (214) 393-0020

--Freed Eisemann gold top audio xfmr #376 or 377 used in NR-6 (open ok), info on Erla Rely-o-dyne recvr, RCA Victor gold coloured plastic logo as used on model C-503 and others, schematic and any info on Supreme set tester Model 339D. Paul Rosen, 30 Cherrystone Dr., Willowdale, Ontario,Canada M2H 1SI Tel. (416) 493-6962 evenings

--operating WE224A,B,or C Cathode Ray tube for early replica scope. Trade tubes, radios or cash. Ross Smith, 1133 Strong Ave., Elkhart, IN 46514

--Kemper A.C. chassis or complete set from early 30's, G.E. K-60,K80,Kadette sets,pre-war Emerson wood and bakelite, Emerson Mickey Mouse and Snow White, Radio Retailing Magazines,Charlie McCarthy,Black New World Globe,grandfather and cathedral clock radios. John Kern, 2320 Rosedale Rd., Quakertown, PA 18951 (215) 528-2128

--German,Japanese,Italian WWII military radio equipment plus related items. 1930's-1940's radio and aviation publications for research including Bendix Engineer, USN Electron, ROU Bulletin, TMs,FMs,SIGs,Berne and FBIS world broadcast stations listings. Hugh Miller, KA7LXY, 6400 Maltby Rd., Woodinville, WA 98072-8375

--operating instructions for Heathkit condenser checker and EICO signal generator model 320. Riders Vol 15 & 16. Walt White, 4203 Hookheath, El Paso,TX 79922 Tel. (915) 584-4744

--schematic for Tel-Sweep Generator 1948 Model TSW 50 Vision Labs. John McDade, #214, 204 E. Joppa Rd., Towson, MD 21204

--grandfather clock radios.Also old and new novelty radios. Have several to trade.Cliff Watts, 51 Glendale Rd., Brantford, Ontario, Canada, N3T 1P5, Tel. (519) 753-5087

--Philco 514, Neutrodyne Plus, metal box with flower decorations; Stewart Warner 950 metal box radio.Top prices paid. Dieter Bardenheier, 50A Park Rd., Auckland 7, New Zealand

--Radio Boys by Allen Chapman.Need "RB @ Sending Stn","RB With Forest Rangers". Will Sell/swap "RB @ Ocean Point", "RB @ Mtn Pass", RB Trailing a Voice". Bob Lindsay, 901 Ferngrove Drive,Cupertino, CA 95014 Tel (408) 996-0498

--Rider radio manuals Vol. 15,17-23, Rider TV manuals Vol. 4,5,6,9,12 plus index; Sams photofacts from 1946-60, Regency transistor radio. John Okolowicz, 624 Cedar Hill Rd., Ambler, PA 19002 Tel. (215) 542-1597

--Westinghouse 787 'Demonstration Triode' or any other demo. triode. Also any data or control boards for this device. Robert Lozier, 600 E. Green St., Monroe, NC 28110 Tel. (704) 283-2638

--Detector assembly for DeForest D-10 and a clean Federal 61.Also any literature or sales info on Zenith transistor "Oceanics". William Wade, Jr., 657-14th Ave., Prospect Park,PA 19076

--Hallicrafters S-72 All Band portable, Crosley 52, PUP, 4-29P,Philco 37-624 farm radio,early battery superhets, kits ok,Grebe CR9 tube socket,Radiola I, VI, 112-A,Clapp-Eastham HZ,Infradyne. Have WD-11 replacements-new WE-215A NOS on WD-11 based direct replacement. $15. plus postage. Charles Rhodes, 64 South River Road, Edgewater, MD 21037

--Tele-Dynamics power supply Model TW24-50 24 volt, 50 ma.;dials,indicators and name plates for a Western Electric 4B superhet (purchased at AWA auction); WE 215-A,VT5 and 955 acorn tubes; RCA Cunningham tube manual No. RC10 or RC11; Leutz's book'Modern Electronics'- Radio Handbook;information on a "Federal Dry Cell tube"-brass based and tipped. Tad Drogoski, 507 Coal Valley Road, Clairton, PA 15025

--Zenith 'Radio Nurse' intercom 1936, Silvertone radio model 6110 by Sears & Roebuck 1938, Sparton Blue Mirrored radios. Highest prices paid. Ross Young, 23 Beverley St., Toronto, Ontario,Canada M5T 1X8 Tel. (416) 598-2172

--spark equipment for club talks and any early spark info.Also QST before 1927. Edward J. White, WA3BZT, 2404 Hedgerow Dr.,Wilmington, DE 19810 (302)475-3355

--Western Electric 216A tubes and Radiola 25 loop antenna. Gordon Wilson, 11108-50 Avenue, Edmonton, Alberta, Canada, T6H 0H9

--amplifier for Kennedy 110,tube socket, schematic,historic information. George Palermo, 1444 First, Sarasota,FL 34236 (813) 365-7777

--information or parts for a Detrolla 193E,case for a Crosley 52, and a complete Crosley 51. Mark Land, 288 Dartmouth St., Rochester, NY 14607 Tel. (716) 473-6838

WANTED

--Thoriated Tungsten wire of 0.015-0.020 mm diameter (.0006-.00076 in) and 0.030-0.036 mm (.0012-.0014 in) diameter with 1.2 to 1.5% Thorium. Who has such wire or knows a supplier? It is needed for Valve replicas of the 20's. Swop for German radios possible. Dr. Rudiger Walz, Insterburger, Str 6, D-6233 Kelkheim, West Germany

--your opinions and information on the best citation-free OT transmitter for a rookie to build. Brian Roberts, 3068 N. Evergreen Rd., Pittsburgh, PA 15237

--want to contact the person at AWA conference who has old meter/galvo at home for sale. Leonard Cartwright, 113 Sea Terrace Way, Aptos, CA 95003

--replicated radio dial face. If I send you the original dial face, can you replicate it? D. Healy, PO Box 764, Woodacre, CA 94973 Tel. (415) 488-0535

WANTED: 500-kc plug-in crystal filter cartridge from an FB-7 National receiver, to replace a cracked element. I do not need the holder, only the crystal. Bill Fizette, K3ZJW, RD 1, Box 55, Henryville, PA 18332.

--Western Electric audio gear and factory literature, Brook amps, RCA 15" coax spkrs, pre-1960 audio magazines. Joe Roberts, Box 19302, Alexandria, VA 22320 Tel. (703) 683-2955

--schematics for Western Air Patrol (Model 146-3974) and Stewart Warner Ferrodyne R-148A broadcast receivers. Don Nelson, P.O. Box 1259, Port Orchard, WA 98366

--pre-1930 Scott or World's Record radios, or kit supers using Selectone coils. Also want SCOTT NEWS publications. Jim Clark 1292 Starboard, Okemos, MI 48864 Tel. (517) 349-2249

--special paper to make a 16" cone for a 1920's magnetic speaker. Frank Hutchins, 2034 Lake Josephine Dr., Sebring, FL 33872

--Riders manuals No. 4 and No's 20-24. D. Healy, P.O. Box 764, Woodacre, CA 94973

DISPOSE/TRADE

--WWII German aircraft transmitter, 300 to 600 Khz w/ganged variometer tuning, MO/PA 3 tubes with Wermacht insignia. Trade for National/Collins receiver or ?. Nick Oland, W3DSE, 821 Kenhorst Blvd., Reading, PA 19611 (215) 264-4563 days or 378-1411 evenings.

DISPOSE/TRADE

--car radios-Buick,Chevrolet,Ford,Dodge. Also repair old radios,phonographs and tv sets. Jack Caprice, RR 01, Box 978, West Winfield, NY 13491

--G.E. airport group replacement bulb "code beacon", good filament. $3.50 plus 3 lb. UPS. Also G.E. projection bulb 1000W, 115V New. $3. plus 3 lb. UPS. John Uscinowski, KE2O, RR#1,Box379, Greenwich, NY 12834

--transformer rewinding.Audio,power, speaker fields, etc. Send a SASE for information Peter Yanczer, 835 Bricken Place, St. Louis, MO 63122

--early radio literature.1920's literature on Silver-Marshal,Hazeltine, Radiola items.Also catalogues and service manuals-all from early builder. Vic Chartrand, Box 325, RR3, Manotick, Ontario, Canada K0A 2N0

--collection of radios for sale due to health. Also related items. Send SASE for list. Hardin McCauley, 8471 Patterson St., St. John, IN 46373 Tel. (219) 365-5979

--Homebrew battery set $45, Superola Grand 3 dialer $55, Sonochorde speaker $50, Philco 40-180 console $49, Music Master horn $65, plus stereo and ham equipment. LSASE for list. Tim Martin, Shaker Heights, Rt 49, Pittsfield,MA 01201

--list of radios including transistor, military, battery, crystal and communications sets plus speakers and books. Send LSASE for list. Jim Sargent, 1010 Chepstow Lane, Sherwood, AR 72116 Tel. (501) 835-5610

--tie clasp and lapel pins N.O.S.radio related Philco, RCA and more. Send LSASE for complete illustrated list. Michael Sabodish Sr. 11-A, Matawan Ave., Cliffwood, NJ 07721

--antique Cardwell tuning condenser type "S" patent 7-21-25.Has cast brass end plates, 12 brass plates 5½ x 2½ spaced 5/16. 10"L x 8"W x 6"H. $55.pp James Fred, R1, Cutler, IN 46920

--Thorola horn-trade only. Richard Brewster, 454 Diablo Dr.,Pittsburgh,PA 15241 Tel. (412) 833-4287

--Rare Kennedy Model 826B console radio (combined Model 26 BC tuner and Model 34 short wave tuner in one cabinet) $300. Want Grebe Synchrophase junk chassis for parts. Walt Sanders, 15 Todd Place, Terre Haute, IN 47803 Tel. (812) 877 2643

DISPOSE/TRADE

--Hallicrafter SX28-A,S36,SX42,S77; National NC-88; Gonset IV. All untested pick up only. Krantz, 100 Osage Ave., Somerdale, NJ 08083

--schematics 1920-60 radio/tv/ham/ Canadian Marconi/electronic organ/misc. $3.50 each or SASE for price quotes on manuals. Your satisfaction guaranteed. Alton Bowman, 4172 East Ave., RD2, Canandaigua, NY 14424

--65 year collection-Radio Masters catalogs, manuals,flyers, books, old televisions, radios,phonos,ham military gear. 48 page list. 2 stamp LSASE. F. Yonker, 7 Old Farms Road, Saddle River, NJ 07458

--voltmeter Hewlett-Packard 400D (201b) $40.; phonograph arm Brush Model PL 20 w/o cartridge,in original box, patent date 1931. (6 lb) best offer; printer, Datasough,parts kit, Model DS180, new, controller pcb,op. front panel and panel cable.Has bad print heat, with maintenance manual (9 lb) $250. Will ship UPS. William Arnold, 27832 Lincoln Rd., Bay Village, OH 44140 (216)835-0520

--new 864 tubes, UX base, low noise, equal to WD-11. An unbased tube will fit WD11 brass base (or use Jim Fred's adapters) $5. each;Avon bottle cathedral radios $5. ea.;record entitled My Radio Man by Carol Chapelle (risque) has chip on edge but 100% playable $5.; NIB 1DP1 CRT $10; working Motorola bakelite tv $30. Jim Farago,P.O. Box6313,Minneapolis, MN 55406

--Zenith T600 Super deluxe Transoceanic short wave portable radio of the '50s. Black stag covered wooden case 12" high 17 5/16 wide 8" deep. Excellent condition. Broken latch. Has operating guide schematic and short wave log. Best offer. John H. Lang, RD Box 191B, Elizaville, NY 12523 Tel. (518) 851-9494

--Meisner Signal Shifter coil set. New packaged in original carton. Oscillator Grid,Oscillator Plate and buffer coils for frequency range 1600 to 1870 Khz. Also Baldwin type C headphones in excellent condition. Want coil sets series 60 for SW-3 receiver. Allen Breiner, W3TI, 212 Race St., Tamaqua, PA 18252

--Scott Allwave 12 in Napier console cabinet. Radio is complete,unrestored. Cabinet needs minor veneer repair. Tube covers and coil cans need replating. Trade for best offer of 1940's jukeboxes and/or pre 1941 slot machines. Alvin Heckard, RD1, Box 88, Lewistown, PA 17044

--pre-1942 ham gear, communications receivers,manuals and parts.Trade for similar items. Will copy any schematic or manual to help others get old gear back on the air.Want Hallicrafters HT-6 coils,schematics, manual.Also Kennedy 110 variable grid leak condenser, pre 1942 communications receivers,ham gear. Larry Rosine, WOOG, 13719 Alhambra, Leawood,KS 66224 (913) 897-4015

--Atwater Kent Model 40, Zenith A2-69, Fada with bakelite case, Firestone (Air Chief) No. S-7398-1, early crystal set, Fada NA, Detrola Dome Radio, Philco Model 50. Free antique components and early schematic books if one person buys entire collection. Jerry Granat, Philmore Mfg. Co. Inc., 40 Inip Dr., Inwood, NY 11696 1-800-645-2262 or (516) 239-6161

--RCA Catacombs repaired for Radiolas 24,25,26,28,30,Super VIII and other radios with RCA catacombs. Call or write. Looking for a tube cover panel for a Radiola 26 and other RCA radios, parts and catacombs. Steve Geary, 1310 Campbell, Sidney, OH 45365 (513)492-0972

--battery sets,horns,speakers and tubes. SASE for new reduced price list. Phil Goodman, 20341 NE 30 Ave., Miami, FL 33180 Tel. (305) 931-7189

AVAILABLE: large collection of early American and foreign radio tubes. Write for list: Dex Deeley, 8 Briar Circle, Rochester, N.Y. 14618

-OTB-

AWA pioneer CHUCK BRELSFORD, K2WW, has been elected vice president of the Arizona Antique Radio Club.

Book Review:

RADIO MANUFACTURERS OF THE 1920s

By Alan Douglas

The success of Alan's book, reviewed in the May, 1988 OTB, has been overwhelming. It has gained international recognition with reviews in several overseas collector and historical publications. As examples, the book has had two reviews in Dutch; one each in Portuguese, German, and Czech; and, of course, any number in English.

Good news: Volume 2 should be ready by late Spring. I'll have full information in the May OTB. [BK]

RESTORING OLD EQUIPMENT

EDITED BY
LUDWELL SIBLEY, KB2EVN
44 E. Main St., Flemington, NJ
All correspondence requires SASE for reply

REPLACING 2.5-VOLT POWER TRANSFORMERS

Here's a tip that may prove helpful. Have you ever tried to find a replacement power transformer for a receiver with a 2.5-volt heater winding? After a fruitless search for one with a '24- and '45-equipped set, I took a physically similar one with a 6.3-volt winding and rewound it. It turned out to be remarkably easy, as most such transformers have the heater winding on the outside. After removing the steel shell and outer insulation, I counted and removed the 28-turn, 18-gauge 6.3-volt winding and replaced it with 12 turns of 14-ga. enameled wire, insulating it with tape. The rewinding took only an hour. The result looks original and runs cool. Be sure to use heavier wire for the replacement winding, as currents are high at 2.5 volts!

Dr. Fred Archibald

[We're talking ten amps of heater current for, say, an AK 55. 14-ga. wire is actually on the small side. Two 16s in parallel, or four 18s, might be easier to handle, and would certainly be easier to find commercially. -Ed.]

REPAIRING AFTs (AND OTHER SMALL COILS)

I recently rebuilt two audio transformers using coil assemblies from Antique Electronic Supply (part no. P-431, $5.95, AES, Box 1810, Tempe, AZ 85281, 602-894-9503). One was from a Crosley 51. The other was the first interstage transformer from a Radiola IIIA. The half-inch window of these assemblies fits the transformer cores very nicely. The assemblies have a center-tapped secondary and could also be used to repair the second interstage transformer and/or the output choke of the IIIA. (The choke has characteristics very similar to those of the secondary winding of the replacement.)

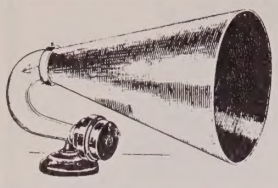
However, before operating on any open transformer, cone or horn speaker, or high-resistance headphone, one should try an old trick. You have nothing to lose and you might win! With suitable caution, charge up a 8-to-20 uF electrolytic to 300 volts or so and discharge it across the open winding. If there's a good spark on discharge, chances are pretty good that you have welded the open ends together.

Frank Dukat

EASY FILL FOR PANEL ENGRAVINGS

An easy way to restore the white engraved markings on old radio panels and knobs is to use typist's correction fluid. Sold under names like Wite-Out, Liquid Paper, and Coverit, this product is a brilliant white filler that is quite easy to use. It is available in a solvent-based formulation and a water-based "for copies" version. Experience with the latter has been quite favorable: place the (cleaned) panel horizontally, paint the fluid into the engraving, and wipe off the excess. It dries in a few minutes and can be recoated if desired. If the white color is too new-looking for your taste, there's a buff-colored version also.

[-LAS] -OTB-



THE LOUDSPEAKER

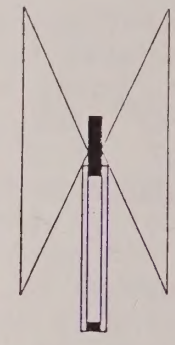
EDITED BY
FLOYD PAUL, W6THU
1545 Raymond, Glendale, California 91201
All correspondence requires SASE for reply

ACME APPARATUS COMPANY

Located in Cambridge, Massachusetts, the Acme Apparatus Company started making radio parts as early as 1920. The company was a prolific advertiser in Radio News, running consecutive ads from February, 1920 into 1928. The first products were audio transformers, but soon the company branched into CW transmitting transformers, one- and two-stage amplifying units, detector assemblies, and then later speakers, B-eliminators, and RF transformers, among other parts.

The October, 1923 ad by Acme contained information that the company was making a horn speaker. The March issue in 1924 had the first picture of the speaker. No mention of price was seen in any ad. The author's Acme horn, acquired at Canandaigua in 1987, is shown in the photograph. The square wood bell with inlaid wood strips (spruce?) is well made; the horn shape is indeed unusual. Only one other Acme horn is known to exist; that one is in Ralph Muchow's collection. Perhaps this speaker was too expensive to survive market conditions because very few ads mentioning it have been found and because specimens in collectors' hands are so scarce.

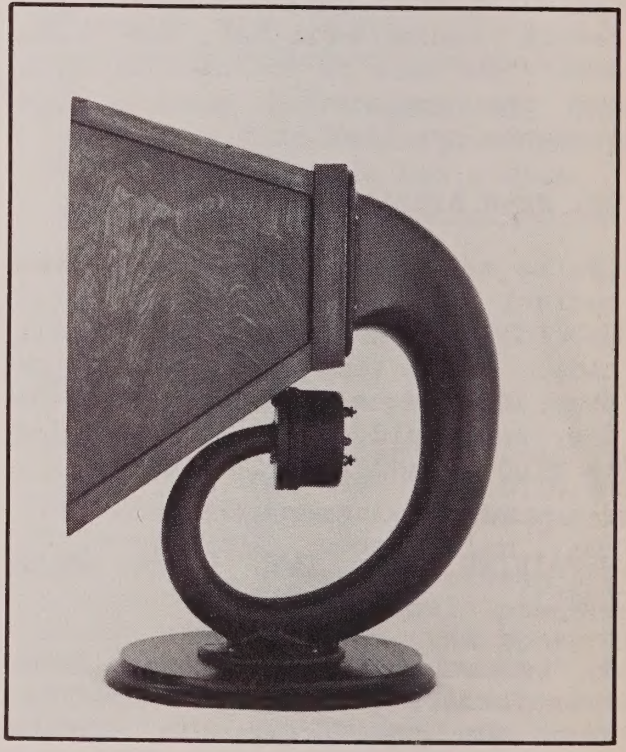
The Acme horn-speaker advertisement disappeared shortly after March, 1924; no mention of speakers was noted until September, 1925, when Radio News ran the following item by Acme Apparatus: "After five years and 256 experimental models, Acme is proud to put its name on the loud speaker . . . Two years ago, after having made, studied, and tested 203 models, we obtained a very good horn type loud speaker. But our radio and sound engineers determined to go even further. After 23 months of experimenting, making and testing 53 additional loud speaker models they at last developed the Acme Free-edge cone loud speaker." A sketch of the double-cone



Section of the New Acme *Free-Edge Cone* Loud Speaker, showing the two *free-edge cones.*

speaker, taken from an advertisement, is shown.

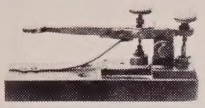
This first drum-shaped double-cone magnetic speaker was followed in



December of 1925 by a second version in a wood cabinet. These speakers were retroactively designated K-1 and K-2 respectively. In October of 1926 a Radio News ad listing gave details and pricing

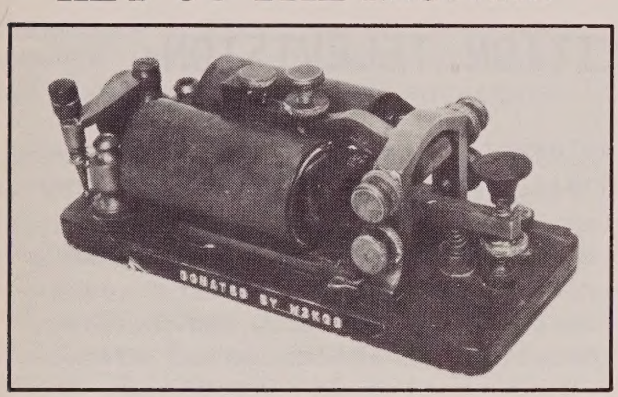
(Continued on p. 39)

KEY and TELEGRAPH



EDITED BY
LOU MOREAU
W3WRE

KEY OF THE MONTH



Lineman's Test Set. These miniature transceivers appeared about the end of the 1850s for use by telegraph linemen in testing wires at the top of a pole. Photo: W3WRE Collection.

THE KEY FORUM

QUESTION: We know that the space program promoted miniaturization, but when did the transceiver first appear in the commercial market?

ANSWER: I can't give the exact date, but, discounting VHF units, it was in the late 1950s. The printing telegraph, with its use of a combined sender-receiver, appeared long before that. However, transceivers as such date to the beginning of the communications industry. According to James Reid in The Telegraph in America, the combination of a key and a sounder mounted on a common base (KOB) had been in use by 1850. Back then, these combined instruments were used for test purposes and were carried outside the office to check wires to find if they were working, to report to the wire chief, etc. The KOBs were taken to the top of a telegraph pole, cut in to the wire, and operated on a crossarm for test purposes.

Later, on June 18, 1861, Dr. T. S. C. Lowe took a telegrapher up in his balloon "Enterprise," where he worked with a KOB. The Civil War saw those early combined instruments used by both armies, with operators working behind the lines of battle to send needed facts to commanders.

QUESTION: Can't we say that the telephone was really the first miniature transceiver?

ANSWER: Now you are implying voice operation. While no one denies that it is a transceiver, still, it is not the first miniature. The earliest were those advertised as the Lineman's Test Set, more popularly called a "pocket key and sounder," that appeared at the end of the 1850s as a product of the Chester Brothers of New York. Their design, while copied, changed little other than in the materials used; these small complete telegraph units were actually the earliest miniature transceivers.

-OTB-

MOORHEAD *(continued from page 16)*

velopment which surely would have come about with the expiration of the Fleming patent in November of 1922.

Table 1 lists electrical data for all Moorhead tubes known to have been made in any significant quantity. Although the author has seen information indicating the possible manufacture of several types not listed here, no evidence of actual production has been found. The information in the S/N RANGE OBSERVED column is taken from the tube survey mentioned at the beginning of the article. The author was not alone in this effort, and wishes to thank Will Jensby, Lauren Peckham, Brother Patrick Dowd, Alan Douglas, and others whose help was crucial in compiling these data.

-OTB-

TELECOMMUNICATION

EDITED BY
DON DeNEUF
WA1SPM

STATUS OF HIGH-DEFINITION TELEVISION

D. K. deNeuf, WA1SPM

The electronics industry in Japan has made great strides in developing a high definition (HDTV) system providing 1125 scanning lines, as compared with the National Television Systems Committee (NTSC) 525-line system and the European 625-line standards. However, this particular HDTV system is not compatible with NTSC receivers in, for example, the United States and Japan. The system requires about 10 MHz of radio frequency bandwidth, compared with the present 6 MHz, which introduces numerous complications. Japan plans to establish a direct broadcasting satellite by April, 1989, providing a bandwidth accomodating three HDTV channels, while the French television authority has had satellite transponders available for this purpose since last October.

Many studies, proposals, and conferences have been underway concerning the future of HDTV, including proposed compatible converter methods to accomodate the 230 million NTSC receivers now in use in Japan and North America. In 1987 the Federal Communications Commission was urgently petitioned by 58 broadcasting organizations to "do something quickly" about HDTV. The FCC issued a notice of inquiry into the technical and public-policy issues surrounding the "use of advanced technologies by broadcast licensees," and put a freeze on the allocation of new TV channels. A key statement in the notice indicated that advanced TV technologies (ATV) would "appear to be beneficial, but . . . the implementation of ATV would impose considerable costs. It is our view that in the event we authorize some form of ATV we do it in a way that makes its benefits available to all viewers." In January, 1988, the FCC announced an Advisory Committee on ATV to assist its deliberations; the IEEE has sponsored a 1988 international conference on consumer electronics in Chicago. Since then, the FCC has come out with a position requiring compatibility with existing receivers. Laboratory tests of some of 18 systems that are candidates for a U. S. HDTV standard are scheduled for early 1989 under auspices of the FCC Advisory Committee.

Three standard-definition systems are operating in the TV world today: NTSC, PAL (Phase Alternate Line), and SECAM (Sequential Color and Memory). NTSC is used in 32 countries, including the U. S., Canada, Mexico, Central America, and Japan. Another 63 employ the PAL system, among them the U. K., Germany, Spain, India, China, Australia, New Zealand, Brazil, and Argentina. SECAM is used in 42 nations, including France, the USSR, and the Eastern Bloc. These systems are incompatible with each other, but some TV receivers in Europe can be switched among them. Sixteen nations have only black-and-white TV; nine (Botswana, Cameroon, Guyana, Laos, Malawi, Mali, Mauritania, Somalia, and the Spanish Sahara) have none at all. About 20 possible systems for HDTV are under development, some of them requiring a second 6-MHz channel to carry the extra bandwidth but compatible with NTSC sets. The HDTV problem carries

(Continued on p. 39)

STATUS OF HIGH-DEFINITION TELEVISION (Continued from p. 38)

major political overtones, of course, based on a desire to revitalize the U. S. consumer electronics industry, plus the ongoing contention among the cable TV industry, the fiber-to-the-home proponents in the telephone industry, and the over-the-air broadcasters.

Incidentally, there is a humorous definition by television engineers worldwide of the three existing systems, depending on the one they operate or favor. NTSC is "Never Twice the Same Color," PAL is "Pay And Learn," and SECAM is "Supreme Effort to Counter American Methods."

NOTES ON "BAIN'S CHEMICAL TELEGRAPH"

[Pat Leggatt, chairman of the British Vintage Wireless Society, provides the following comments on the Bain electrochemical telegraph system as covered in this column last November.]

Another very significant invention of Alexander Bain's, though not exploited commercially, was his 1843 proposal for facsimile transmission of frames of printers' type. This embodied analysis of an image surface by line and field scanning, transmission in the form of a serial data stream, and reconstitution at the receiver as an area image by similar line and field scanning synchronised with that at the transmitter. The scanning, transmission, and synchronisation techniques were almost identical in principle to those in present day television.

The frame of type metal was held in contact with a mosaic of short fine wires, the free ends of which were scanned by a conductive stylus. The stylus was atached to a swinging pendulum, generating the horizontal scan, while a frequency divider in the form of an electromagnetically operated clock escapement provided vertical scan by slightly lowering the frame of type metal after each horizontal scan. The transmitted signal was formed by current through the stylus as it traversed any mosaic wires which were in contact with type metal.

At the receiver a similar pendulum and escapement system scanned a conductive stylus over a mosaic of wires, this time in contact with a sheet of chemically impregnated paper which was discoloured on passage of electric current. Synchronization of transmitter and receiver scanning was achieved by electromagnetically operated latches which delayed the swing of one pendulum if it got ahead of the other.

-OTB-

AWA PROFILES

GROTE REBER, pioneer radio astronomer of the 1930s, was honored in the January issue of QST. Grote, who was one of the early members of AWA, presently lists his address in Tasmania, where he is still listening to the sounds of deep space.

ROBERT M. MORRIS, W2LV, is the top AWA member on the ARRL DXCC honor roll, with 363 countries to his credit. Check it out - see QST, January, p. 70.

Two AWA members, **ELLIOT SIVOWITCH**, K3JRA, and **RAY HUTT**, AA4SI, are featured in the January issue of CQ, describing the amateur station at the Smithsonian Institution, NN3SI.

-OTB-

ACME APPARATUS (Continued from p. 36)

on Acme's extensive product line. In December, 1927 a K-1A double-cone magnetic speaker was introduced. The ad read "With cones on both sides, each 13 inches in diameter, and with two motors instead of one to feed sound to these cones, you enjoy the advantage of two perfect speakers working as one."

The one horn speaker (October 1923) and three magnetic cone types (1925-27) comprised the speaker products made by Acme.

-OTB-

RECENT RADIO and ENTERTAINER OBITUARIES

by Charles Griffen

Elmer Alexander (66 years), drummer with Goodman & Doc Severinson.
Luis Alvarez (77), Nobel Prize recipient; worked on the A-bomb.
Mark Austad (71 years), vice pres., Metromedia Broadcasting Co.
Ros Bateman, W4AO (76), president, Telcom, Inc; moonbounce pioneer.
Burton Benjamin (70 years), former head of CBS TV news.
Frank Bingman (74), ancr on "Amos 'n Andy," "My Friend Irma," etc.
Vet Boswell (77 years), last survivor of Boswell Sisters trio.
Robert Brickwedde (73 years), WXYZ announcer.
Lawrence Brown (81 years), trombonist with Ellington, etc.
Jim Burke (68 years), with CBS, WDAF, KMBC, KTLA, KSD.
Johnnie Campbell (81 years), chief engineer, WSM.
Billy Daniels (73 years), singer with Erskine Hawkins, etc., remembered for "That Old Black Magic."
Hazel Dawn (98), singer-actress in early Victor Herbert shows.
Joseph Depew (76 years), director: "The Beverly Hillbillies."
Andre Dervieux (91 years), perfected color movies and 16-mm sound.
Sid Dorfman (72), TV-Radio writer: "Duffy's Tavern," "Mash," etc.
Kitty Doner (92), top vaudeville male impersonator, debut in 1905.
Phil Dougherty (64), N. Y. Times columnist and WQXR broadcaster.
Vasken Eynatian (68), manager of Raytheon microwave/power tube div.
Mary Lee Fairbanks (75), second wife of Douglas Fairbanks, Jr.
Gunther von Fritsch (84), movie-TV director: "March of Time," etc.
Gert Froebe (75 years), German actor, in over 100 films.
Enrico Fulchignoni (75 years), expert in mass communication.
Wayland Fullington (76 years), program director, WIRE.
Alexander Gottlieb (81), writer-producer of "Donna Reed Show," etc.
Bonita Granville (65 years), well known child movie star; later TV.
George D. Green, an original employee of the Kennedy Radio Co.
Horace Henderson (83 years), pianist with Redman and Ellington bands; arranger for Goodman's program "Let's Dance."
John Houseman (86), VOA head, WW II; TV actor in "The Paper Chase."
Frederick Lack (93), vice pres., Western Electric and Bell Labs.
Phil Leslie (79), writer, "Fibber McGee & Molly," "The Lucy Show."
Lester Lewis (75 years), veteran radio and TV agent.
Edmund Long (92 years), chairman, Catawba Broadcast Co.
Irving Mansfield (80 years), television producer.
Ken Murray (85 years), vaudeville, movie, and TV star.
Jean Newell (104 years), daughter of actress at Ford's Theater when Lincoln was shot.
Norman Newhouse (82), builder of publishing and cable-TV empire.
Jane Morton Norton (79 years), owner of TV station WAVE.
William Peterson (75 years), engineer with Avco, GE, etc.
William Phelps (85 years), founder, "Radio Caracas" (Venezuela).
Leo Rosenberg (92 years), one of first broadcasters: at the 1920 Harding-Cox election returns.
Harold Rosson (93 years), director: "David Harum" (1915), "Duel in the Sun," "Singing in the Rain," etc.
Samuel Ruben (88), inventor (300 patents, incl. alkaline battery).
Robert Schind (76 years), with CBS, Mutual, WESC.
Victoria Shaw (53 years), Australian actress.
Donald Tuttle (64 years), broadcaster at WHYN, WHAI, WGY, WTIC.
Albert Vestro (74 years), popular Connecticut sportscaster.
Chauncey Watt (74), engineer with Raytheon, Harvey-Wells, NASA.
Joseph Wilkins (85), KFBB founder; president, Montana Bcg Stations.

A BRAZILIAN SILENT KEY

Carlos Fazano

Victor Carone, one of the first Brazilian electronic technicians, started his career in 1927 at the age of 16 as a seller of gramophone records. Like the majority of pioneers, he studied electronics by himself. During the Thirties he worked at GE's plant at Sao Paolo as a serviceman in the assembly and checkout of radio sets imported from the U. S. From 1940 until retirement in 1975, he built up his own laboratory for the manufacture of AM radios and worked as an advisor for VHF and UHF TV relay stations. In spite of his intensive activities in the electronic field, he always saved time for studying the evolution of electronic technolgy.

Mr. Carone passed away on May 15, 1988. His talent as an electronic technician, as well as his active work to preserve the memory of electronic technology by gathering electronic artifacts over the years, is prodigiously illustrated in the photo, a view of his now-silent workshop.

SILENT KEYS

Frederick Wayne Chapman, W8TKR
Lakeland, Florida, September 30, 1988

Carl Drumeller
Oklahoma City, September 6, 1988

George W. Ferguson
Middletown, Pennsylvania

Eldon L. Heck
Shelby, Ohio, December 3, 1988

H. Charles Kaetel
Menomonee Falls, Wisc., Oct. 4, 1988

Albert Karz
Paupack, Pennsylvania, June 20, 1988

Gilbert N. Lahuillier, W2HIN
Clifton, New Jersey, October 24, 1988

Kenneth Stecker, W8SS
Dearborn, Michigan, July 25, 1988

William J. Wakefield, WB4DSX
Sunnyvale, California, October 1, 1988

1929 QSO PARTY (Continued from p. 23)

notes could be heard better through the QRM, or, perhaps for sentimental reasons, by the oldtimers of Spark days.

Many remembrances came with those notes; it was like resurrecting the past, as soon as the "Pandora's box" was opened. It reminded me of my pair of 45s in push-pull back in '37 and later the TNT with a 6F6 connected as a triode that gave me a QSL from England on 40 meters. The black tube paint peeled off from overheating. I had a two-tube regenerative receiver; had to hold my breath when copying or else it started oscillating.

Most of the participants used Hartleys or modified ones. A few TNTs were there also, and on one occasion I chatted with a 6L6 crystal oscillator. Not everyone reported on his receiver but at least four SW-3s were there. I knew them very well; my receiver is a replica of one, built with old components and an extra 41 tube for speaker amplification.

That same Wednesday morning, I installed a rectifier and filter circuit to feed DC to the filament of my 210 tube. It was a great improvement, and my sigs reached an almost T9 sound. . . I believe that my Hartley was the most modified one of all, that even the original designer wouldn't recognize. . . How many beginner hams realize that they can build with their own hands a rig so simple, but capable of establishing communication with others? A thrill even for an "old salt."

-OTB-

THE MAILBAG

Comments from readers are welcome on any subject of interest in the field of early wireless communications. Because of space limitations, letters which are published may be edited. Send all material to the Editor, OTB.

[From a note to "Roby" Robinson, writer of November's article on the RCA AR-60 receiver:]

I wonder if you know that Pan American Airways used this receiver in their Miami (Dinner Key) facility, WDKL, in the late Thirties. I visited there in 1937, when I was fifteen and a new ham. They had several AR-60s at that time. A most impressive looking radio.

In 1942 I was hired by PAA as a flight radio operator trainee. I believe they still had some AR-60s then, although I think they had begun to replace them with the National NC-200 series.

While flying with PAA in 1943, I was riding C-54s, C-47s, etc., in their military contract division and, of course, had the pleasure of using the old BC-348s, which you also had a hand in.

It's always nice to read about and see a photo of one of these fine old radios. They were mechanical masterpieces, most of them, as well as state of the art electronically for their time.

I've pounded brass both as an amateur and as a commercial operator for over half a century now and enjoy reading about the earlier communication receivers. Thanks for a look back at the AR-60.

George Andrews, W5PV
Russellville, Arkansas

[A recent letter to Bruce Kelley:]

Just a note to say you have done a very fine job on the OTB. As a new member (three years so far), I have enjoyed the amateur-related articles not found in any other journal. The AWA is a great group of guys. I am only 34 years old, but relish the OT gear. Guys like W3BNO, "Smitty," gave me the starting point. From there I built a TNT from QST (1929) and it worked fine, the first time, I might add! Now you're calling it quits as editor, and your association goes forward.

Wayne Francis, WA3VAT
Baltimore

[Another to Bruce, in the same vein:]

I'd like to take the chance to say "con-grats" for all the years you spent making the AWA and the OTB what they are today. I know the members appreciate your work, but few really know what it's taken to make the club the success it has been. I just hope it will always maintain the caliber you have achieved.

Rod Phillips (VP, ARCA)
Bryn Mawr, Pennsylvania

THE "BAKELITE FORUM" (CONT.)

[More observations on the hot topic of nondestructive cleaning of Bakelite parts, as discussed in the August and November OTBs:]

I have had the same experience concerning the vulnerability of bakelite and similar plastics to cleaning solutions, and have a few relevant thoughts to add in this regard.

Before becoming a radio operator, I was a professional craftsman, engaged in repair and restoration of stringed musical instruments, a background that has served well toward restoration of other goodies.

I often use a strong solution of trisodium phosphate (TSP) in hot water to clean metal and plastic

(Continued on p. 43)

parts. A quick soak and a light scrub with a soft toothbrush under running water makes light work of decades-old dirt, grease, smoke deposits, etc. This stuff does indeed eat into bakelite: I was lucky to see the red residue immediately when I put the paddle of a Vibroplex Presentation key in for a bath. (Aluminum is the other thing to keep out of TSP.) Cleaners like Fantastik contain a similar strong alkaline; some contain a "weak" solution of lye, which I'm sure is often stronger than TSP at its worst. Most of the nastiest dirt on old parts is a hardened conglomerate of dust and resinous or oily deposits. Such materials usually break down under kerosene or paint thinner; I have not found these substances to have any negative effect on bakelite or other plastics. Kerosene is preferred as it is gentler. Usually I use the solvent on a rag which is also damp with water, and the combination is excellent - a little elbow grease is required. This is not a great departure from some violin polishes, although they contain fancier things like turpentine, linseed oil, alcohol, and traces of the odd exotic resin along with the watery component. If a piece of bakelite like a finely grooved knob is particularly nasty to clean, I soak it in hot tap water with a lot of Sunlight dish soap, then scrub with kerosene on an Oral-B 60 toothbrush, repeating as needed.

As for the shiny finish on bakelite parts, I am pretty certain that it is an integral result of the molding process. The existence of lots of unseen utilitarian but shiny bakelite parts leads me to believe this. The interior of a hollow part is always shiny, with no practical reason a manufacturer would have applied a finish to those surfaces. . . I have to date found nothing to match the durability of the original glossy surface. There is a grainy texture below the surface that is impossible to buff to a high shine. Though it looks porous, it isn't, thus a new finish like lacquer or varnish doesn't adhere well. Bakelite is an extremely durable substance. Even finishes based on strong solvents like toluene or acetone don't bite in and bond to it, which is why I hadn't expected it to dissolve in TSP and water.

The closest I have come to a successful finish on bakelite is cyanoacrylate instant glue (Crazy Glue, Zap, Jet, Hot Stuff, etc.). It can actually be applied as a sort of French polish, but only on small, smooth parts. It is also somewhat tricky to do smoothly. The bakelite is prepared with a wet sanding with 600-grit wet-or-dry paper to remove scratches. I then soak a cotton swab with glue (the very watery thin type, not the viscous variety for gluing wood), and quickly and smoothly wipe a thin coat over the plastic. It hardens in seconds, so one can cement the swab to the work if there is any hesitation in the motion. After a couple of such coats, I again very lightly sand with the 600 paper to remove any irregularity in the finish. A final couple of wipes of glue are followed by a final quick sanding. The resulting finish gets polished with Turtle Wax white auto polishing compound, giving a dull shine that approximates the original look of the plastic. A further treatment with a fine-grade automotive finishing polish (Meguiar's Mirror Glaze) will provide a truly glassy luster. I can now apply the above procedure in less than 30 minutes on a small part like the knob of a telegraph key.

This works only on smooth surfaces; the glue will do irreversible damage to a fine texture like a finely grooved or fluted knob or an embossed logo. Because the product is unmanageable beyond a few seconds, it is definitely not for uniform application to large broad surfaces. Practice on some disposable parts before taking chances on your treasures with it - there's a knack to be acquired. A new cotton swab is used for each coating, and I try not to

(Continued on p. 44)

soak it with too much glue; it hardens in a few seconds, often with a little puff of smoke as the glue "goes off."

A final note: the above-mentioned Turtle Wax white polish will bring a dull sheen to 600-grit sanded bakelite, and a further wipe with a Kleenex wet with Lemon Pledge often yields a satisfactory result.

Rick Van Krugel, VE7FOU
Victoria, BC

[Some more notes on bakelite, from a British member:]

I've been asking around with reference to finish on bakelite mouldings. I live near Southend on Sea, the "home" of Ekco Plastics, who were pioneers in large bakelite mouldings in England, using very large presses imported from Germany about 1930. Ekco made their own bakelite radio cabinets and contracted many other mouldings, such as those used on Avo multimeters.

One old-timer I talked to was radio collector Bill Caten, who lives in Southend and worked in a bakelite moulding shop (not Ekco) in the late '30s. He says many mouldings were finished with wax. This was applied with a large buffing mop, no doubt the same as the calico mops available today. This would explain why some bakelite radio sets look very dull when washed with a detergent to clean them. Some are so filthy there is little choice. It is possible to use a liquid brass polish (ammonia and pumice being the chief ingredients, I think). With a lot of work, a bright finish is obtainable. This is not so good where intricate design is a feature of the moulding, however, and the calico mop is probably better. It is possible to buy polishing wax suitable for plastics over here - it looks like red jeweller's rouge with wax to me. It comes in a long cake and is intended to be used with a buff. One bakelite enthusiast to whom I sold a receiver had access to jeweler's rouge in powder form and mixed it with turbine lubricating oil. The finish he achieved was one of the best I've ever seen.

We have a bakelite appreciation society here: they have meetings, hiring an old bus and taking along bakelite picnic sets and other bakelite things to give the gatherings a period flavour.

Philip Taylor
Canewdon, Essex

-OTB-

LOEWE (Continued from p. 28)

3NFK-3NFL-3NFW series: like the 3NF, but with cathodes added to the low-level stages and the grid return of the second stage brought out to a base pin.

WG33: a later gridleak detector coupled to two audios, with 50-volt 180-mA heater for line operation.

WG34: a pair of tetrodes, one of them intended as an output stage. (Same heater as the WG33.)

WG35: an HF/IF tetrode, a diode detector, and an output tetrode. (65-volt, 180-mA heater.)

WG36: (same heater) a pair of variable-mu HF/IF pentodes and an oacillator triode. (Same heater as the WG35.)

The first five of these tubes were indeed integrated circuits (field-effect technology, no less!). The WG36 wasn't, but, with 12 base pins and a plate cap, put more tube elements into one package than even the GE Compactron multitubes of the late Sixties. The 3NF starred in the now-prized OE333 one-tube receiver; adding a 2HF could give a TRF set. A WG35 and WG36 could form a basic line-operated superhet, assuming use of a metallic or other rectifier for B+.

The 2HF and 3NF are documented in Saga of the Vacuum Tube and the June 1985 OTB; the others, in the 1946 P. H. Brans Radio Tube Vade Mecum. The 2HF turned up in a short-wave converter circuit that von Ardenne published in the June 1932 issue of the IRE Proceedings. (LAS) -OTB-

NEW MEMBERS

The names of all new members will be listed routinely in the OTB. If your name has not appeared within six months, write to the Editor. If you DO NOT wish to have your name published, please notify the membership secretary. Please note that the AWA does not publish or otherwise supply a mailing list of its members.

Terry Adelwerth, NY, TV repair
Henry Ahern, Jr., NH
Theodore H. Althof, Jr., PA
Wilbur Carl Anderberg, W6TXR, CA
Laurence Andersen, FL
Kenneth B. Anderson, W4JQT, VA, AT&T
G. Lane Arbuthnot III, CA, electrical engr.
Herbert C. Baasch, NJ, W2DIM, IT&T Corp.
Terrance Bakowski, IL
Richard Barnett, NY
Ugo Basile, Switzerland, designer & maker of scientific instruments
David Bates, W2HLI, NY, U. S. Navy
Dr. Marc L. Beck, MD
Rupert St. J. Loftus Brigham, London, England, BVWS
Chuck Brydges, W4WXZ, NC
Walter Buffinton, Jr., CT, Vintage Music Company
Lee Buslik, IL
Martin Buws, NH
Duane A. Bylund, UT
Alan G. Carter, England, radio-TV eng.
John P. Charlton, ON
Arthur Cherry, KB4CKI, VA
Dave Clark, FL
Dr. Michael A. Clark, IN
Tom S. Clinton, GA
Israel Cohen, MA, WCAP
Jonathan D. Cohen, MD
Philip Collins, CA
Arthur H. Crighton, ON, CBC
Scott D. Cronkhite, KS, Electronic intelligence
Larry T. Cross, IN
Edgar L. Curry, WA
Marie Cyr, NY
James S. Davis, NY
Michael R. Davis, NY
Michael Devonick, MA
Tony DiBenedetto, VA
Frank DiPace, MA
Vince Doerr, FL
Willard J. Donlay, NY, WB2DBF, Magnavox sales and service
Helen Louise Donner, WA4IWM, FL
Douglas S. Durie, NY, Bell Aerospace
Andrew Durosky, N2FLZ, NY
Karl Erik Eriksson, Sweden, army/AF etc.
Tom Farland, N0JMY, IA
Carl D. Fleming, CT, KA1LLK
Perry Fink, KB9VQ, IL
John J. Fishinger, NJ
Keith G. Foote, CA
Shane Foraker, Cdr, USN, MN, Submarine communications
Robert B. Fronseen, NY, Pan Am Airways
Tim Fuss, NY
Gregory L. Galyean, AK
Ray D. Galyean, ID
Steven C. Galyean, KS
George Glann, NY
Alan Glasser, NY2G, NY
Dr. Tobias Goodman, RI
Ed Graf, ON
John Graff, NY
Alan M. Grant, NY
Mark Greenia, CA
Harry Griffith, NM
Frederick Hartnell, CA
Lawrence L. Hawes, FL, KA4QZQ
Ernest G. Hendrickson, ex-W9YHF, WA, Radio & TV; two-way radio
Dieter Hollander, ON
Dante D. Gullotti, MA
Daniel J. Healy, CA, Radio service
James E. Hehir, NY, Radio-TV servicing since 1930
Glenn Heimroth, NJ
Dennis Heikura, CA, WB7EGG
Richard Hendel, NY
Timothy Hendel, FL, KC4BBI
Tom Hodge, WA2TYM, Ramsey Electronics
Jesse W. P. Hodges, W4JG, NC
Muir E. Houghton, CA
Robert G. Huber, IN
Steve Hutcherson, OK, W5CTS
Rob Ingraham, AB4FY, NC
Barry G. Jackson, TX
Frits Jacobsen, BC
Mark Jacobson, NJ
Al James, K8CFC, OH
Robert Jim, M. D., HI
Warren Johnson, CO
Bob Johnston, N4TQ, VA
Rollin C. Jones, NY
Shingo Kamiya, PA
Jack C. Kaucher, OH
Robert Kazanjian, CA
John Kegley, TX
Gerald L. Kennedy, ON, VE3GLK
Michael D. Ketchersid, KA5JFT, OK
Sherwood M. Kidder, W1DOK, NH
Scott A. Kuehn, PA
Ray Kushnir, CO
Bruce A. Landey, CA, US Army Signal Corps
John H. Lang, NY, Air traffic control
William Litant, MA
Erik J. Lofquist, WA
William A. Longworth, KM1N, NH, Wang Labs
Angel Lopez, NY
Wayland Loree, MI
Daniel Lubczanski, PA
Michael W. Lundgren, MN, Collins Radio
Richard T. Mann, NY
Wyatt E. McDaniel, RI, W8HTD, WTOL/WJAR
Richard J. MacGarva, W2HCT, NY
Angelo E. Mago, MI
Michelle Manganaro, PA
Camille S. Marie, MD, W3EPR, Westinghouse
Steve Martin, NY
Henry J. McCooey, NY
Lyman K. McLean, NC, KB4LEN
R. Megregian, MC
Allen R. Miller, KG2V, NJ, WGLS/WVLT
Victor L. Miller, NY, WA2RCC, Loral Elec.
A. Mincey, K4VZL, TN
Kenneth C. Mooney, PA
Dave Murrian, TN
Bernard Naworski, OH
Donnal Nelson, KA7DMZ,WA

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NEW MEMBERS (Continued)

Bob Newingham, IL
Robert Nichols, W2KBQ, NJ
Richard S. Norton, NY Norton Assoc., Inc.
Jim O'Connor, ON
Daniel Oswald, WI
Dave Ott, SC
Mike Otten, AR
Nat Pendleton, N3GMB, Smithsonian Inst.
Patrick L. Person, WA, K7YIR
John Persun, WD8CUR, WV
Ronald Propst, PA
Gaelle Reboui, FL
J. E. Reed, K4TBM, TN
Billy Richardson, TX
Douglas Ripka, PA
Wilfred E. Robbins, NY
M. Robert, PQ
A. Fulton Roberts, Jr. NC
Ed Romney, N4DFX, SC, Moss Radio School
Newton Rubenstein, VA
Thomas Rusche, M.D., WB9WAG, IN
Cliff Sacker, BC
Floyd Sakemiller, W9PRV (lic. 54 years!)
Egon A. V. Sandell, SM7DO, Sweden, airline radio operator
Ed Saunders, WA7RNT, NM, U. S. Army, bomb disposal
James Schiffhauer, NY
Guy R. Schmidt, PA
John F. Schneider, WA, KB7AK, RF Specialties
Lyman H. Seamans, Jr., WA3RTU, CT
Herb Segiel, NY
Robert Shipley, TN
Michael Sisko, CT
David W. Smith, MA
Kevin G. Smith, N6OME, CA, ESL Inc.
Herbert L. Snell, NY, W2FCH, Grumman Aero.
Abraham Stavsky, CA
Douglas C. Stoner, PA, WB3KNW
Warren W. Stucki, MO, W0DUB, Bcg. museum
Dennis Suhre, PA
Norman D. Sullivan, W9GP, IL, Motorola
Herb Susmann, KA2ZOH, NY
Charles A. Swigart, OH
Ralph P. Taylor, WA, N7DWD
Frederick Thomas, NY
Bill Thompson, KA2ABB, NY
John Thuring, NJ
Charles Tileston, CO
Conrad Trautmann, NY, WSYR/WYYY
Donald C. Tretler, NH
Frank Vaillancourt, NH
Andrew Vincent, NY, Stromberg-Carlson
C. W. Wallar, GA
John David Watkins, Isle of Wight
Herman Weber, ON
Morgan Wesson, NY
Frank Whitney, AR
Tom Williams, ON
John C. Williamson, IL
Loren Willis, KA9SYC, IN, Radio-TV service
Timothy Yang, NY
James Yeary, CA Yeary Communications
Joe Zaborowski, MC
Clarence Zornes, IL, W9TAL

-OTB-

100-kW TUBE (Continued from p. 3)

first used in their station WGY. Similar 100-kilowatters were made by RCA and Western Electric (the 298A). Later versions were scaled down and frequently used in the finals of 50-kW AM broadcast transmitters.

A special case was the WLW half-megawatt transmitter of the mid-Thirties. It used **twelve** UV-862s in three push-pull-parallel groups, modulated by eight more in two groups (IRE Proceedings, October 1934). The AWA Museum displays three different 100-kW tubes, including one removed from the WLW transmitter.

(Continued from p. 29)

siderable cost of typesetting and halftones, this book can be sold for the low figure of $10.50. It's well worth it.
92 pp, paper-bound, available from Floyd A. Paul, 1545 Raymond Ave., Glendale, CA 91201. Shipping and handling: add $1.50 for one book, $2.50 for two, and $1.00 more for foreign orders.

AWA BID-AUCTION ON RARE TUBES

As with the auction held in late 1987, the Association will offer a collection of rare vacuum tubes to the highest bidder, with proceeds to the AWA Museum Maintenance Fund. Following general museum practice, the tubes are duplicates, will be deaccessioned, and are available only to the highest bidder. They will be guaranteed to be as described, with shipment covered by insurance.

The tubes will be broken into eight groups and will include De-Forest DL- and DV-types, Myers, Arcturus "blues," VT1s, miscellaneous W. E. types, WD-11s, Tune-A-Lite, Moorhead and AudioTrons, Vac-O-Bulb, and miscellaneous foreign tubes. Wherever possible, reference will be made to either Tyne's Saga or Stokes' 70 Years.

For a listing, write: Dex Deeley, 8 Briar Circle, Rochester, NY 14618.

-OTB-

Museum News

SPECIAL RADIO EXHIBIT AT PENNSYLVANIA STATE MUSEUM

A major exhibit, "Making Waves: Radio Communication in Pennsylvania 1900-1935" is currently open at the Pennsylvania State Museum, at Third and North Streets in Harrisburg. It will run through April. It will include items from the 140 that AWA pioneer Harry Houck presented the museum, along with other pieces from the museum's other collections. It brings to light the accomplishments of such Pennsylvanians as Elihu Thomson of Philadelphia (of Thomson-Houstom, predecessor of GE), the Rev. Joseph Murgas of Wilkes-Barre, turn-of the century wireless inventor, and one A. Atwater Kent of Philadelphia.

Museum hours are 9:00-5:00, Tuesday-Saturday, and noon-5:00, Sunday. We haven't seen the exhibit yet, but the promotion photo displays an AK breadboard, an old-style RCA fixed capacitor, a good-sized Magnavox horn, and a massive wireless-vintage variable transmitting capacitor.

FOOTHILL MUSEUM ENDANGERED

COLLEGE OFFICIALS WANT TO PHASE OUT OPERATION

The Foothill College Electronics Museum at Los Altos Hills, California may close if sufficient funds are not raised and college officials are not pressured to continue it. The Museum, centered on the Perham Collection and originally funded by several electronics companies, met the first blow when Proposition 13 severely limited college financial support several years ago. Since then, its operation has been clouded by internal bickering and has been supported only by dedicated volunteers.

The situation came to AWA's attention at the 1988 Annual Conference when Dr. Orval Ellsworth related the perilous situation, which includes proposals to close the museum and use part of the building for classrooms. Ellsworth had temporarily been the liaison man between the school and the museum.

Curators meet at luncheon: Bro. Pat Dowd (Manhattan College Tube Museum), Orval Ellsworth (Foothill Museum), Ray Hutt and Elliot Sivowitch (Smithsonian)

The museum contains the finest radio collection on the West Coast. It houses historical DeForest artifacts and papers, plus numerous exhibits including a Federal arc transmitter. -BK

PAVEK MUSEUM OFFICIALLY REOPENED

The Pavek Museum of Wonderful Wireless, described in the November 1987 OTB, held an official reopening ceremony on October 29. Reportedly containing the "most extensive collection of pioneering wireless and early broadcasting equipment and memorabilia ever assembled in Minnesota," it opened with a ribbon-cutting ceremony, tours, and appearances by local broadcast pioneers from the Minneapolis area. For future visits, the particulars are as follows:

Pavek Museum of Wonderful Wireless
3515-17 Raleigh Ave.
St. Louis Park, MN 55416
612-926-8198

-OTB-

THE MUSEUM

NEW EQUIPMENT in A.W.A. Museum

(sets, parts, magazines, books, etc.)

W. Andrews; J. Baird, W9VQD; F. Bennett; M. DeHenseler, HB9RS; W. Donlay, WB2DBF; W. Erbland; W. Fizette, K3ZJW; M. Hall, K2LP; W. Hood, W2FEZ; A. Keikle; F. Linn, W9NZF; R. McCarty, W2EJ; C. McDaniel, W3HCW; P. Milde; J. Nelson, W2FW; W. Orr, W6SAI; H. Phillips, W2EFI; M. Pires; J. Richardt, W2WIY; E. Sanders, W2VM; R. Smith; G. Sprinkle; E. Stiles, W2BJW; A. Uryniak, W2UT; J. Wenrich, K2RY; R. Williams, N3VT; E. K. Company.

MUSEUM NEWS

This year will see some restructuring in our museum personnel. First, Steve Sykes, KD2OM, has been appointed assistant curator. He is employed by Harris RF Communications, one of the world's largest manufacturers of sophisticated communication equipment. Steve is familiar with both early and present-day equipment. We feel his selection is an excellent choice.

A new member of the Administrative Committee is Morgan Wesson, assistant curator at the International Museum of Photography in Rochester. His professional background and guidance will be most welcome.

The fiftieth anniversary of commercial television in the United States is in 1989. To celebrate this event, AWA will have a special display of early television sets and related objects. In addition, plans are being made to change several exhibits and increase lighting in some areas. Work is continuing on the new 800 square foot office-library room. Look for a full report in the next OTB.

COMING AUCTION

Members and friends of the Association have given a large collection of old receivers and miscellaneous components to sell at auction. Following the practice of previous years, the auction will be held at the Spring Meet in May (see notice elsewhere in the OTB). Everything goes (no minimum), with proceeds to the Museum Maintenance Fund.

-BK

AWA ELECTRONIC COMMUNICATION MUSEUM

Location:

Village Green, Rtes. 5 & 20
East Bloomfield, New York

Hours:

May 1st through October 31st
SUNDAY, 2 to 5 PM

June 1st through August 31st
SATURDAY, 2 to 4 PM
WEDNESDAY, 7 to 9 PM

(Closed Holidays)

Group tours by appointment:
Call 716-657-6260

FREE ADMISSION

Curator:

Bruce Kelley, W2ICE

Assistant Curator:

Steve Sykes, KD2OM

Administrative Committee:

Charles Bliley, K3NAU
Dick Fish, W2OWF
Art Kelly, W2ROB
Roland St. Louis, K2LKH
Don Ray, W2PKS
Morgan Wesson

Treasurer:

Dex Deeley

Counsel:

Sherwood Snyder, W2KFU

Museum Maintenance and Guides*

Dave Atkins	Brad Mitchell,WB8YGG
Al Bowman, W2ZUX	Ron Nelson, KA2GLG
Dave Crothers	Mani Pires
Paul Feldman	M. Rosenfeld, KA2JAJ
Bob Hobday, N2EVG	Bill Shaw, W2HYN
Doug McManus	John Ward

*(*Officers and Directors also act as Museum guides.)*